بسم الله الرحمن الرحيم

ملف متكامل ورائع عن....

Commonly used drugs in Emergency & ICU



❖ **Pharmacology:**

- It is a Latin word meaning drug knowledge.
- Pharmacou = drug.
- Ology = science or knowledge.

❖ **Drug:** is defined by the United States food and drug administration as "a substance or agent used in diagnosis, cure, prevention, mitigation, or treatment of a disease of condition."

Naming of drugs:-

1. Generic name: (chemical name), defines the chemical structure.
2. Trade name: is given by specific pharmaceutical company.

pregnancy category

A system of classifying drugs according to their established risks for use during pregnancy. **Category A:** Controlled human studies have demonstrated no fetal risk. **Category B:** Animal studies indicate no fetal risk, but no human studies; or adverse effects in animals, but not in well-controlled human studies. **Category C:** No adequate human or animal studies; or adverse fetal effects in animal studies, but no available human data. **Category D:** Evidence of fetal risk, but benefits outweigh risks. **Category X:** Evidence of fetal risk. Risks outweigh any benefits

*Commonly used abbreviations *

Rx = symbol for a prescription

a.c. = before meals

alt. hor. = every other hour

A.M.or a.m. = morning

Aq = water

a.u. = each ear, both ears

a.d. = right ear

a. l. = left ear

b.i.d. =two times a day

BUN = blood urea nitrogen

c = with

Caps = capsules

CHF = congestive heart failure

cm = centimeter

oz. = once

p.c. = after meals

dc = discontinue

dl = deciliter

dr = dram

elix. = elixir

g (gm) = gram

gr = grain

gtt = a drop, drops

GU = genitourinary

H, hr = hour

h.s. = at bed time

mg = milligram

mcg =microgram

Meq=millieguivalent

ml = milliliter

NG = Nasogastric

ng = nanogram

NPO = nothing by mouth

o.d. = every day

O.D. = right eye

o.h. = every hour

o.s., o.L. = left eye

os =mouth

o.u. = each eye, both eyes

d. = day

® = right

p.o. = by mouth

P.R. = by rectum

per = by, through

prn = when necessary

q = every

q.d. = every day

q.h. = every bour

qhs = every night

q2h = every 2 hours

qid = 4 times daily

I.M. = intramuscular
qod = every other day

I.V. = intravenous
Kg = kilogram

L = liter
s = without

Min = minute
SS = one- half

Sc = subcutaneous
Syr = syrup

SL = sublingual
stat = immediately

SOS = if necessary once only
tab. = tablet

Sol = solution
t.i.d. = 3 times daily

Mg = microgram
U = unit

V.O. = verbal order

***weights & Measures ***
*****1 teaspoonful = about 5 ml

1 tablespoonful = about 15 ml
*1 pound (lb) = 454 gram

1 drop = 1 minim
*1 kg = 2.2 lebra (lb)

1 gm = 15 grains
*1 ml = 15 minims



Drug	Page	Drug	Page



Commonly used drugs in Emergency and ICU

1. Paracetamol " : " Acetaminophen

Trade names: acamol, panadol

Class: antipyretic, non opioid analgesic, Para-aminophenol type.

Pregnancy: (Category B)

Action: Acetaminophen decrease fever by an effect on hypothalamus leading to sweating & vasodilatation.

It also inhibits the effect of pyrogens on the heat-regulating Center on the hypothalamus.

It may cause analgesia by inhibiting CNS prostaglandin syntheses

So it has no anti-inflammatory effect.

It doesn’t manifest any anticoagulant effect or any ulceration of GIT.

Uses:

- Pain due to Headache, dysmenorrhea, arthralgia, myalgia, muscluoskletal pain, immunization, teething, tonsillectomy.
- To reduce fever due to bacterial & viral infection.
- As a substitute for aspirin when contraindicated.

Contraindications:

Renal insufficiency, anemia.

Side effects:

- Chronic & even acute toxicity can occur after long symptom-free usage.
- Hemolytic anemia, neutropnea, thrombocytopenia
- Skin rashes, fever, jaundice, and hypoglycemia.
- Symptoms of over dosage:
- Hepatic toxicity → general malaise, delirium, depression seizures,
- Coma & death, nausea, vomiting, fever, and vascular collapse.

Treatment of overdose:

1- Induction of emesis.
2- Gastric lavage.
3- Activated charcoal.
4- Oral N-acetyleystine (mucomyst) is said to reduce or prevent hepatic damage by inactivating acetaminophen metabolites which cause liver effects.

Dose: by mouth, 0.5–1 g every 4–6 hours to a max. Of 4 g daily;

Child:

- 2 months 60 mg for post-immunization pyrexia;
- Otherwise under 3 months (on doctor's advice only), 10 mg/kg (5 mg/kg if jaundiced);
- 3 months–1 year 60–120 mg,
- 1–5 years 120–250 mg,
- 6–12 years 250–500 mg;

These doses may be repeated every 4–6 hours when necessary
(Max. of 4 doses in 24 hours)

Nursing considerations:

1- Suppositories should be stored below 27C.
2- Liver function studies for long term therapy.
3- Note signs of met-hemoglobinemia: bluish discoloration of gum & fingernails.
4- Have mucomyst available for signs of toxicity.
5- Teach patient signs of toxicity to be reported immediately.

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2. Acetylsalicylic Acid ' Aspirin ' :

Trade name: Aspirin

Classification:

Non-narcotic analgesic, antipyretic, anti-inflammatory, antirhumatic, ant platelet, NSAID.

Pregnancy: (Category C)

Action:

- The antipyretic effect is due to an action on the hypothalamus that results in heat loss by vasodilatation of peripheral blood vessels & promoting sweating.
- The anti-inflammatory effects probably by decreasing prostaglandin synthesis & other mediators of the pain response.
- The analgesic action is not fully known but may be due to improvement of the inflammatory condition .

N.B.: Aspirin also produces inhibition of platelet aggregation.

Uses:

- Pain
- Myalgia
- Arthralgia
- Headache
- Dysmenorrhea
- Antipyretic (reduce fever)
- Anti-inflammatory (arthritis, gout, rheumatic fever)
- To reduce the risk of recurrent ischemic attacks & strokes in men.

- Reduction of risk of death or nonfatal MI in patients with history of infarction or unstable angina pectoris.

Dose:

As "ant platelet" A single dose of aspirin 150–300 mg is given
As soon as possible after an ischemic event, preferably
Dispersed in water or chewed.
The initial dose is followed by maintenance treatment with
Aspirin 75–150 mg daily.

Anti-inflammatory: 0.3–1 g every 4 hours after food; max.
In acute conditions 8 g daily; CHILD, juvenile arthritis, up
to 80 mg/kg daily in 5–6 divided doses after food,
Increased in acute exacerbations to 130 mg/kg

Note: High doses of aspirin are very rarely required and are now
Given under specialist supervision only, and with plasma
Monitoring (especially in children)

Contraindications:

- Hypersensitivity to salicylates.
- Asthma in conjunction with anticoagulant therapy.
- Vitamin deficiency (risk for bleeding increase with Vitamin K deficiency).
- Chickenpox or influenza (potential risk for Reye's syndrome among children and teenagers).
- Pregnancy and lactation.
- One week before & after surgery.
- Patients receiving anticoagulants.
- Patients with bleeding disorders (ie, hemophilia)
- GI bleeding or hemorrhage from other sites.
- History of GI ulcers.

Side effects:

- ✓ Children e chicken pox (rays syndrome).
- ✓ Heartburn, nausea, anorexia, occult blood loss..
- ✓ GI bleeding, potentation of peptic ulcer.
- ✓ Bronchospasm.
- ✓ Anaphylaxis
- ✓ Skin rashes.
- ✓ Increase bleeding time.

Salicylate toxicity

- Salicylism: nausea, vomiting, dizziness, tinnitus, difficulty hearing, diarrhea, mental confusion.
- Acute aspirin poisoning: Respiratory alkalosis, hyperpnea, tachpnea, hemorrhage, confusion, pulmonary edema, convulsion, tetany, metabolic acidosis.

Drug interactions:

- Risk for bleeding increase if taken with other anticoagulants.
- Risk of GI bleeding increase if taken with steroids, alcohol, or other NSAINDs.
- Increased risk for salicylate toxicity if taken with frusimide (lasix)
- Hypotension may occur if taken with nitroglycerin.

Nursing considerations:

1. Take drug with or after food or with milk to decrease GI irritation.
2. Assess for history of asthma and history of hypersensitivity.
3. Do not use with other anticoagulants.
4. Note any history of peptic ulcer.
5. Report signs of side effect e.g. gastric irritation if occurs.
6. Aspirin is not given 1 week before & after surgery to prevent bleeding.
7. If patient is diabetic, discuss the possibility of hypoglycemia occurring Patients should monitor their blood glucose level frequently.
8. Teaches patient about the toxic symptoms (ringing in the ears) dizziness, mental confusion-etc) and ask him/her to report it to physician.

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3. Activated Charcoal :

Trade name: Eucarbon

Action: adsorbents

Pregnancy: (Category C)

Uses: used as adsorbent in cases of organophosphourous poisoning

Dose : the first dose of 100 g is given with a laxative (E.g. magnesium sulphate), followed by activated charcoal 50 g every 4 hours (or more frequently if tolerated) until the charcoal is seen in the stool.

Nursing considerations:

- Explain the procedure to patient because it always given via NGT especially if the patient is conscious and you want to insert NGT
- Wear gloves when dealing with this drug because the powder form discolor every thing to black color when touching it

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4. **Adrenaline ’ Epinephrine " : Sympathomimetics**

Trade name: Adrenaline

Class: Direct acting-adrenergic agent.

Pregnancy: (Category C)

Action:

A natural hormone produced from adrenal medulla; induce marked stimulation of alpha, β1 + β2 receptors causing cardiac stimulation, bronchodilation & decongestion.

Uses:

1- Relief of respiratory distress due to bronchospasm.
2- Rapid relief of hypersensitivity reactions.
3- Cardiac arrest.
4- Open- angle glaucoma.
5- To prolong the action of anesthesia.
6- Topically to stop bleeding.

Dose:

Available in ampoules of 1ml containing 1 mg adrenaline

Can be given by I.M injection. I.V. & S.C.

In CPR "A systole and PEA":

1 in 10 000 (100 micrograms/mL) is recommended in a dose of 10 mL by intravenous injection, preferably through a central line.

If injected through a peripheral line, the drug must be flushed with at least 20 mL sodium chloride 0.9% injection (to aid entry into the central circulation).

In Acute anaphylaxis:

By intramuscular injection (preferably midpoint in anterolateral thigh) (or by subcutaneous injection " not generally recommended ’) of 1 in 1000 (1 mg/mL) solution " when there is doubt as to the adequacy of the circulation, by slow intravenous injection of 1 in 10 000 (100 micrograms/mL) solution (extreme caution),

Dose:

IV: 10 micrograms/kg " 1 in 10 000 " as indicated: every 3-5 min"

If endotracheal route:

The used dose should be 3-10 times IV dose and diluted.

IM injection

Adult 0.5 mg may be repeated several times if necessary at 5- minute intervals according to blood pressure, pulse and respiratory function

Infusion: 2-10 mic/min titrated to response.

Contraindications:

- Narrow angle glaucoma.
- Shock
- Lactation.
- Tachycardia
- During labor (it may delay the 2nd 8 loge do labor).

Side effects:

- Fatal ventricular fibrillation.
- Cerebral hemorrhage
- urinary retention,
- headache,
- necroses at injection side,
- Blurring of vision, photophobia.

Nursing considerations:

- Never administer 1: 100 solutions IV. Use 1: 1000 mg sol. For I.V. use.
- Use tuberculin (1cc) syringe to measure adrenaline.
- Administer adrenaline using piggyback set to adjust the rate of infusion.
- Administer infusion by electronic infusion device for safety & accuracy.
- Closely monitor patients receiving I.V. adrenaline infusion.
- Note the client for signs of shock "loss of consciousness, clammy, cold skin, cyanosis…. etc.).
- Briskly massage site of S.C. or I.M. injection to hasten the action of the drug.

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5. Aluminium hydroxide and magnesium hydroxide :

Trade name: " Allumag"

Class: Antacids

Pregnancy: (Category B)

Action: neutralizing or reducing gastric acidity, thus increasing the pH of the stomach and relieving hyperacidity. If the pH is increased to 4, the activity of pepsin is inhibited.

Uses:

a. Treatment of hyperacidity. (Heart- burns).
b. Peptic ulcer
c. Duodenal ulcer.
d. Gastroesophaged reflux.
e. hiatus hernia

Dose: 10 mL 3 or 4 times daily of liquid magnesium–aluminum antacids. Antacids are best given when symptoms occur or are expected, usually between meals and at bedtime, 4 or more times daily; additional doses may be required up to once an hour.

Contraindications:

- Pregnancy
- Children less than 6 years of age.
- Chronic use of aluminum containing antacids may contribute to development of Alzheimer's disease.

Side effects:

- Constipation, intestinal obstruction, bone pain, muscle weakness.

Nursing considerations:

- It is recommended that most antacids be taken at 3 hours after meals & at bed – time.
- Tablets should be thoroughly chewed before swallowing & followed by a glass of milk or water.
- Shake liquid suspensions thoroughly before pouring the medication .
- Client's taking aluminum or calcium containing antacids should take 2500-3000 cc of fluids to prevent constipation.
- Advise clients to report persistent diarrhea or constipation physician.

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6. Allopurinol : Zyloric

Trade name: Zyloric

Class: Anti-gout Agents

Pregnancy: (Category C)

Action: Is a potent xanthine oxidase inhibitor which reduces both serum and urinary uric acid levels by inhibiting the formation of uric acid without disrupting the biosynthesis of vital purines.

Uses:

- Is the drug of choice for chronic gouty arthritis (not useful for treatment of acute gout).
- Hyperuricemia associated with blood diseases, renal diseases.
- Prophylasis in hyperuricemia in patients with neoplastic conditions.
- Treatment of patients with recurrent uric stone formation.

Dose

initially 100 mg daily, preferably after food, then adjusted according

to plasma or urinary uric acid concentration; usual maintenance dose in mild conditions 100–

200 mg daily, in moderately severe conditions 300–600 mg daily, in severe conditions 700–900 mg daily; doses over 300 mg daily given in divided doses; CHILD under 15years, (in neoplastic conditions, enzyme disorders) 10–20 mg/kg daily (max. 400 mg daily)

Contraindications:

- Hypersensitivity.
- Lactation.
- Hemochromatosis.
- Children except for those with neoplastie diseases.

Side effects:

- Skin rash, alopecia, fever leukopnea, arthralgia, nausea, vomiting.

Nursing considerations:

- Administer with food or immediately after meal to lessen gastric irritation.
- At least 10-12 eight- ounce glasses of fluid should be taken each day.
- Keep urine alkaline to prevent the formation of uric acid stones.
- Take complete drug history.
- Monitor the CBC, liver & renal function & serum uric acid on routine bases.
- If skin rash appear, report to physician.
- Avoid excessive intake of vitamin C which lead to the potential for the formation of kidney stones.
- Advice clients not to take iron salts with allopurinol since high iron concentration may occur in the liver.

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7. Amikacin Sulfate:

Trade name: amikin

Class: Antibiotic "Amino glycosides"

Pregnancy: (Category C)

Action: inhibit protein synthesis by binding irreversibly to ribosome which leads to production of nonfunctional protein. They are usually bactericidal as a result of disruption of bacterial cytoplasmic membrane.

Uses:

- Bone and joint infections.
- Respiratory tract infections.
- Septicemia (including neonatal sepsis).
- Urinary tract infection (UIT).
- Post operative infections.
- Intra –abdominal infections (as peritonitis) .
- Skin infections (including burns)

Dose : by intramuscular or by slow intravenous injection or by infusion, 15 mg/kg daily in 2 divided doses, increased to 22.5 mg/kg daily in 3 divided doses in severe infections; max. 1.5 g daily for up to 10 days (max. cumulative dose 15 g); child 15 mg/kg daily in 2 divided doses; neonate loading dose of 10 mg/kg then 15 mg/kg daily in 2 divided doses.

Contraindications:

- Hypersensitivity to amino glycosides.
- Long –term therapy.
- For patients with impaired renal function or pre-existing hearing impairment.

Side effects:

- Ototoxicity: tinnitus, hearing impairment, ataxia & dizziness.
- Renal impairment (Nephrotoxicity) hematuria, proteinuria…
- Neurotoxicity: headache, tremor, lethargy, numbness, burning of face.
- Others: nausea, vomiting, skin rash & super infection.

Nursing considerations:

- I.M. admin. Inject deep into muscle to minimize pain.
- Admin. For only 7-10 days.
- Assess history of hypersensitivity.
- Obtain lab. Studies for renal function.
- Continue to monitor for ototoxicity.
- Discuss with the client / family the importance of taking medications at the appropriate prescribed time intervals.

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8. Aminophylline:

Class: Antiasthmatic, bronchodilator

Pregnancy: (Category C)

Action: Relaxes smooth muscles of bronchi causing bronchodilation and increasing vital capacity of the lungs

Uses:

- Prophylaxis and treatment of bronchial asthma.
- Reversible bronchospasm associated with C.O.P.D.

Dose :

By mouth, 100–300 mg, 3–4 times daily, after food

slow intravenous injection: over at least 20 minutes" not previously treated with theophylline" (with close monitoring) (5 mg/kg)

Intravenous infusion: 0.3 – 0.7 mg/kg/hour

Contraindications:

- Hypersensitivity
- Hypotension
- Coronary artery disease (angina pectoris).

Side effects:

- Nausea, vomiting, epigastric pain.
- Rectal irritation following use of suppositories.
- Headache, dizziness, Hypotension, arrhythmias (tachycardia)

- Aminophylline given by rapid I.V. may produce hypotension, flushing, precordial pain, Headache & dizziness.

Nursing considerations:

- Dilute drugs & maintain proper infusion rate.
- Assess client for any history of hypersensitivity.
- Obtain baseline blood pressure and pulse prior to starting therapy, monitor B.P. & pulse closely during therapy.
- Observe closely for signs of toxicity.
- To avoid epigastric pain (when administered orally) give the medication with meals.
- Monitor for serum level of theophylline.
- Instruct the client to increase intake of fluids to liquefy secretions.

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9. Amiodarone:

Trade name: Cordarone, Pacerone

Class: Antiarrhythmic agent

Pregnancy: (Category D)

Action: Amiodarone is categorized as a class III antiarrhythmic agent, and prolongs phase 3 of the cardiac action potential. It has numerous other effects however, including actions that are similar to those of antiarrhythmic classes I, II, and IV.

Uses:

- Ventricular fibrillation
- Ventricular tachycardia
- Atrial fibrillation

Dose : by mouth, 200 mg 3 times daily for 1 week reduced to 200 mg twice daily for a further week; maintenance, usually 200 mg daily or the minimum required to control the arrhythmia

by intravenous infusion: initially 5 mg/kg over 20–120 minutes with ECG monitoring; subsequent infusion given if necessary according to response up to max. 1.2 g in 24 hours "900 mg over 23 hours ".

Ventricular fibrillation or pulseless ventricular tachycardia: by intravenous injection over at least 3 minutes, 300 mg

Contraindications:

- allergic reaction
- Pregnant and lactation.
- It is contraindicated in individuals with sinus nodal bradycardia, atrioventricular block, and second or third degree heart block who do not have an artificial pacemaker.
- Individuals with baseline depressed lung function should be monitored closely if amiodarone therapy is to be initiated.
- The neonates.

Side effects:

- Cardiovascular

  Cardiac arrhythmias, CHF, SA node dysfunction (1% to 3%); hypotension, sinus arrest (postmarketing).

- CNS

  Abnormal gait/ataxia, dizziness, fatigue, lack of coordination, malaise, paresthesias, tremor/abnormal involuntary movement (4% to 9%); decreased libido, headache, insomnia, sleep disturbances (1% to 3%); confessional states, delirium, disorientation, hallucinations, pseudotumor cerebri (postmarketing).

- Dermatologic

  Photosensitivity/Solar dermatitis (4% to 9%); flushing (1% to 3%); erythema multiform, exfoliative dermatitis, pruritus, skin cancer, Stevens-Johnson syndrome, toxic epidermal necrolysis, vasculitis (postmarketing).

- EENT

  Visual disturbances (4% to 9%); abnormal smell sensation (1% to 3%).

- GI

  Nausea, vomiting (10% to 33%); anorexia, constipation (4% to 9%); abdominal pain, abnormal salivation, abnormal taste (1% to 3%); pancreatitis (postmarketing).

Nursing considerations:

- During IV infusion, carefully monitor blood pressure and
- Slow the infusion if significant hypotension occurs.
- Bradycardia should be treated by slowing the infusion or discontinuing it if necessary. Sustained monitoring is essential because drug has an unusually long half-life.
- Report adverse reactions promptly. Bear in mind that long
- Elimination half-life means that drug effects will persist long after dosage adjustments are made or drug is discontinued.
- Be alert to signs of pulmonary toxicity: progressive dyspnea, fatigue, cough, pleuritic pain, fever.
- Auscultate chest periodically or when patient complains of respiratory symptoms. Check for diminished breath sounds, rales, pleuritic friction rub; observe breathing pattern. Drug induced pulmonary function problems must be

distinguished from CHF or pneumonia. Keep your medical direction physician informed.

- Monitor heart rate and rhythm and BP until drug response has stabilized. Report promptly symptomatic bradycardia.
- Patients already receiving antidysrhythmic therapy when
- Amiodarone is started must be closely observed for adverse effects, particularly conduction disturbances and exacerbation of dysrhythmias. Dosage of previous agent should be
- reduced by 30−50% several days after amiodarone therapy is started

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10. Ampicillin:

Trade name: Penbritin

Class: Antibiotic "Broad-spectrum penicillin’

Pregnancy: (Category B)

Action: Inhibit cell wall synthesis, some act by binding to penicillin binding protein in the cytoplasmic membrane of the bacteria.

Uses:

- Respiratory, urinary & GI tract infections & other infection due to ampicillin sensitive organisms.
- Meningitis caused by Neisseria meningitidis.

Dose

By mouth, 0.25–1 g every 6 hours, at least 30 minutes before food; CHILD under 10 years, half adult dose.

Urinary-tract infections, 500 mg every 8 hours; CHILD under 10 years, half adult dose.

By intramuscular injection or intravenous injection or infusion, 500 mg every 4–6 hours; CHILD under 10 years, half adult dose

Listerial meningitis (in combination with another antibiotic), by intravenous infusion, 2 g every 4 hours for 10–14 days; INFANT under 1 month, 50 mg/kg every 6 hours; 1–3 months, 50–100 mg/kg every 6 hours; child 3 months–12 years, 100 mg/kg every 6 hours (max. 12 g daily)

Contraindications:

- Hypersensitivity to penicillins.
- Use cautiously with renal disorders.

Side effects:

- Allergic: skin rashes, pruritis, wheezing, fever…. .
- Diarrhea, abdominal cramp pain, nausea, vomiting.
- Psendomembranous colitis, thrombocytopenia, leukopnea
- Thrombophlebitis + Electrolytes imbalance following I.V. use.

Hepatotoxicity.

I.M. injection may cause pain at the injection site.

Nursing considerations:

- After reconstitution for I.M., I.V. administration, the solution must be used within the hour.
- I.V. administration should be given slowly within 3-5 minutes or by infusion.
- I.M. injections are made deeply into the gluteal muscle.
- Assess regularly for allergic reactions. If reaction occurs the drug must be discontinued immediately, Epinephrine 'O2' antihistamines + corticosteroids must be immediately available.
- Detain client in an ambulatory care site for at least 20 min after administering Penicillin.
- After injection because rate of absorption should not be increased.
- Complete entire prescribed course of therapy.

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11. Amphotercin:

Trade name: Amphocin, Fungizone

Class: Antibiotic, antifungal

Pregnancy: (Category B)

Action: amphotericin associates with ergosterol, a membrane chemical of fungi, forming a pore that leads to K+ leakage and fungal cell death

Uses:

Antifungal infection

Dose : *by mouth*, intestinal candidiasis, 100–200 mg every 6 hours; Infant and child, 100 mg 4 times daily

Prophylaxis Neonate 100 mg once daily

By intravenous infusion, systemic fungal infections, initial test dose of 1 mg over 20–30 minutes then 250 micrograms/kg daily, gradually increased if tolerated to 1 mg/kg daily; max. (severe infection) 1.5 mg/kg daily or on alternate days

Contraindications:

Allergic reaction to amphotericin

Side effects:

- Burning, itching, redness, or other sign of irritation not present before use of this medicine, Skin rash, Dryness of skin.
- Nausea, vomiting, diarrhea, melena, abd. Cramps.
- Fever, headache, thrombophlebitis, bone marrow depression, pancytopnea. Anaphylaxis.

Nursing considerations:

- The drug is toxic and should be used only for patients under close medical supervision with a relatively certain diagnosis of deep mycotic infections.
- I.V. adm. usually reserved for life threatening diseases because it is toxic.
- Treatment should be continued for at least 48 hr after clinical cure has been achieved to prevent relapse.

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12. Atenolol :

Trade name: Normatin

Class: Beta-adrenergic blocking agent

Pregnancy: (Category D)

Action: Beta-adrenoceptor blocking " anti hypertensive, anti anginal"

Uses:

- Hypertension.
- Angina pectoris.

Dose: by mouth, Hypertension, 50 mg daily (higher doses rarely necessary)

Angina, 100 mg daily in 1 or 2 doses

Arrhythmias, 50–100 mg daily

By intravenous injection, arrhythmias, 2.5 mg at a rate of

1 mg/minute, repeated at 5-minute intervals to a max. Of 10 mg

Contraindications:

- Bradycardia, C.H.F., cardiogenic shock, diabetes, thyrotoxicosis, chronic bronchitis, asthma, bronchospasm, emphysema.

Side effects:

- Bradycardia, C.H.F., hypotension, cold extremities (due to peripheral vasoconstriction), edema, dyspnia, shortness of breath, nausea, vomiting, hepatomegaly and bronchospasm.

Nursing considerations:

- For IV use, the drug may be diluted in sodium chloride, dextrose, on dextrose saline.

- Instruct patient/family to take blood pressure and pulse.
- Provide written instructions as when to call physician (e.g. HR below 50 beat/min).
- Instruct patient to dress warmly during cold weather.
- Diabetic patient should be very careful about symptoms of hypoglycemia.
- Report any asthma-like symptoms.

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13. Atorvastatin:

Trade name: Lipitor

Class: Antihyperlipidemic Statins

Pregnancy: (Category X)

Action: lowers the level of cholesterol in the blood by reducing the production of cholesterol by the liver**.**

Uses:

- Preventing and treating atherosclerosis.

Dose

Primary hypercholesterolemia and combined hyperlipidaemia, usually 10 mg once daily

Familial hypercholesterolemia, initially 10 mg daily, increased at intervals of at least 4 weeks to 40 mg once daily; if necessary, further increased to max. 80 mg once daily

Contraindications:

- Allergy to atorvastatin, fungal byproducts, active liver disease or unexplained and persistent elevations of transaminase levels, pregnancy, lactation.
- Use cautiously with impaired endocrine function

Side effects:

- CNS: Headache, asthenia
- GI: Flatulence, abdominal pain, cramps, constipation, nausea, dyspepsia, heartburn, liver failure
- Respiratory: Sinusitis, pharyngitis.
- Other: Rhabdomyolysis with acute renal failure, arthralgia, myalgia

Nursing considerations:

- Obtain liver function tests as a baseline and periodically during therapy.

- Withhold atorvastatin in any acute, serious condition (severe infection, hypotension, major surgery, trauma, severe metabolic or endocrine disorder, seizures)
- Ensure that patient has tried cholesterol-lowering diet regimen for 3---6 mo before beginning therapy.
- Administer drug without regard to food, but at same time each day.
- Consult dietitian regarding low-cholesterol diets.
- Ensure that patient is not pregnant and has appropriate contraceptives available during therapy; serious fetal damage has been associated with this drug.

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14. Atracrium:

Trade name: **Tracrium**

Pregnancy: (Category C)

Action: muscle relaxant

Uses:

- It is used as an adjunct to general anesthesia or sedation in the intensive care unit (ICU), to relax skeletal muscles, and to facilitate tracheal intubations and mechanical ventilation.

Dose : intravenous injection: 0.3–0.6 mg/kg

Maintenance" intravenous infusion" (0.3–0.6 mg/kg hour)

Contraindications:

- Hypersensitive to atracurium, cisatracurium or benzenesulfonic acid.

Side effects:

- Skin flushing, mild reduction in blood pressure, and difficulty in breathing.
- Very rarely anaphylaxis, a severe allergic reaction, can occur when given with one or more anesthetic agents. There have been rare reports of seizures (fits) in ICU patients who usually also had a medical condition that makes them predisposed to having fits, e.g. head injury or brain disease.

Nursing considerations:

- Always assess past history of surgeries and response to anesthesia
- Assess past history, allergies, and medications.
- Assess use of alcohol, illicit drugs, and opioids.
- Close and frequent observation of the patient and all body systems
  monitor vital signs, ABCs.

- Monitor for cardiovascular depression, respiratory depression, and complications of anesthesia.
- Implement safety measures.

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15. Atropine sulfate:

Trade name: atropine

Class: Cholinergic blocking agent

Pregnancy: (Category C)

Action: It is a parasympatholytic agent which cause relaxation of smooth muscles & inhibition of secretary glands

Uses:

- Adjunct in peptic ulcer treatment.
- Irritable bowel syndrome.
- Treatment of spastic disorders of biliary tract.
- During anesthesia to control salivation & bronchial secretions.
- Parkinsonism.
- Anti-arrhythmic (prophylaxis).
- Prophylaxis and treatment of toxicity due to cholinesterase inhibitor including organophosphate pesticides.
- Ophthalmologic treatment of uveitis.

Dose

Bradydysrhythmia :Adult 0.5-1 mg IV may repeated at 5 min intervals until desired rate achieved " max 0.03- 0.04 mg / kg " Pediatric 0.02 mg/kg " min dose 0.1 mg , max single dose 0.5 mg for a child and 1 mg for an adolescent.

Asystole & PEA: Adult 1 mg IV may repeated every 3-5 min "max 0.03- 0.04 mg / kg, complete vagal block"

Pediatric unknown efficacy.

Endotracheal route: 30 mic/kg diluted in 5 ml NS

Anticholinesterase poisoning: Adult 1-2 mg push every 5-15 minutes to dry secretions, no max dose

Pediatric 0.05 mg/kg/dose every 5-15 min

NB

Possible paradoxical bradycardia when pushed slowly or when used at doses less than 0.5 mg

Contraindications:

- Glaucoma, tachycardia, myocardial ischemia.
- Prostate hypertrophy, myasthenia gravis, paralytic ileus.
- Mental impairment, lactation, hepatic disease.

Side effects:

- Nausea, vomiting, dry mouth, constipation, heartburn,
- dizziness, drowsiness, headache, insomnia, blurring of vision,
- Photophobia, flashing, euphoria, hallucination flushing of the skin.

Nursing considerations:

- Check dosage & measure the drug exactly.
- Assess for history of asthma, glaucoma, ulcer... etc.
- Determine the age of the client.
- Frequent mouth care.
- Assess client for change in pulse rate.
- In case of blurring of vision, assist on ambulating & give safety measures.

****

16. Bisoprolol fumarate:

Trade name: Zebeta

Class: Beta-adrenoceptor blocking drugs

Pregnancy: (Category C)

Action:

- Blocks adrenergic receptors of the sympathetic nervous system in the heart and juxtaglomerular apparatus (kidney), thus decreasing the excitability of the heart.
- Decreasing cardiac output and oxygen consumption, decreasing the release of rennin from the kidney, and lowering blood pressure.

Uses:

- Management of hypertension,
- used alone or with other antihypertensive agents

Dose

Hypertension and angina, usually 10 mg once daily (5 mg may be adequate in some patients); max. 20 mg daily

Adjunct in stable moderate to severe heart failure, initially 1.25 mg once daily (in the morning) for 1 week then, if well tolerated, increased to 2.5 mg once daily for 1 week, then 3.75 mg once daily for 1 week, then 5 mg

once daily for 4 weeks, then 7.5 mg once daily for 4 weeks, then 10 mg once daily; max. 10 mg daily

Contraindications:

- Sinus bradycardia, second- or third-degree heart block, cardiogenic shock, CHF.
- Use cautiously with renal failure, diabetes or thyrotoxicosis (bisoprolol can mask the usual cardiac signs of hypoglycemia and thyrotoxicosis), lactation.

Side effects:

- CNS: Dizziness, paresthesias, sleep disturbances, hallucinations, disorientation, memory loss, slurred speech .
- GI: Gastric pain, flatulence, constipation, diarrhea, nausea, vomiting, anorexia, ischemic colitis, , retroperitoneal fibrosis, hepatomegaly, acute pancreatitis.
- CV: Bradycardia, CHF, cardiac arrhythmias, sinoatrial or AV nodal block, tachycardia, peripheral vascular insufficiency, claudicating, CVA, pulmonary edema, hypotension
- Respiratory: Bronchospasm, dyspnea, cough, bronchial obstruction, nasal stuffiness, rhinitis, pharyngitis.
- GU: Impotence, decreased libido, Peyronie's disease, dysuria, nocturia, frequent urination.
- Musculoskeletal: Joint pain, arthralgia, muscle cramp
- EENT: Eye irritation, dry eyes, conjunctivitis, blurred vision
- Other: Decreased exercise tolerance, development of antinuclear antibodies, hyperglycemia or hypoglycemia, elevated serum transaminase, alkaline phosphatase, and LDH

Nursing considerations:

- Do not discontinue drug abruptly after chronic therapy (hypersensitivity to catecholamine may have developed, causing exacerbation of angina, MI, and ventricular arrhythmias).
- Taper drug gradually over 2 wk with monitoring.
- Consult with physician about withdrawing drug if patient is to undergo surgery (withdrawal is controversial).

****

17. Calcium:

Trade name: Calciday, Caltrate

Class: Electrolyte, mineral Calcium Salts

Pregnancy: (Category B)

Action:

- It is essential for maintenance of normal function of nerves, muscles, skeletal system & permeability of cell membranes & capillaries.
- Necessary for activation of many enzymes, contraction of cardiac, skeletal & smooth muscles, never impulses, respiration, and blood coagulation.

Uses:

* I.V:

- Acute hypocalcemic tetany secondary to :
- Renal failure
- Hypoparathyroidism.
- Premature infants.
- To treat depletion of electrolytes.
- During cardiac resuscitation.

* I.M. or I.V:

- To reduce spasm (renal & intestinal).
- To relief sensitivity reactions of insect bites.

** P.O:

- Chronic hypoparathyroidism.
- Osteoporosis
- Osteomalacia.
- Rickets
- Myasthenia gravis
- Supplement for pregnant women.

Dose

- In hypocalcaemic tetany an initial intravenous injection of 10 mL (2.25 mmol) of calcium gluconate injection 10% should be followed by the continuous infusion of about 40 mL (9 mmol) daily, but plasma calcium should be monitored.
- This regimen can also be used immediately to temporarily reduce the toxic effects of hyperkalaemia.
- Maintenance: calcium gluconate 1–2 g daily.

Contraindications:

- Digitized patients.
- Some renal & cardiac patients.

- Cancer with bone metastasis.

Side effects:

- Hypercalceia characterized by lassitude – fatigue, skeletal muscle weakness, confusion & constipation.
- Renal calculi, bradycardia, arrhythmias & renal impairment.
- Rapid I.V. administration. May result in vasodilatation, decreased B.P. & H.R., cardiac arrhythmias, syncope and cardiac arrest.

Nursing considerations:

Oral:

- administer 1-1.5 hr after meals, alkalis & large amounts of fat decrease the absorption of calcium.
- If the client has difficulty swallowing large tablets, obtain a calcium in water suspension by diluting the calcium in hot water then cooled by administration.

I.V:

- Administer slowly.
- Observe vital signs closely for evidence of bradycardia & hypotension.
- Prevent any leakage of medication into the tissue since it is extremely irritating.

I.M:

- Rotate the injection sites.
- Obtain baseline renal function.
- In case of hypocalcemic tetany, provide safety precautions to prevent injury.

****

18. Captopril:

Trade name: Capotin, nhabace

Class: antihypertensive, inhibitor of angiotensin synthesis.

Pregnancy: (Category C)

Action:

- Captopril is a highly specific competitive inhibitor of angiotensin I Converting enzyme.
- The enzyme is responsible for the conversion of angiotensin I to angiotensin II which decrease BP.
- Reduce peripheral arterial resistance.
- Decrease aldosterone secretion which works to increase level of serum potassium.

Uses:

- Hypertension.
- In combination with diuretics and digitalis in the treatment of CHF.

Dose

hypertension, used alone, initially 12.5 mg twice daily; if used in addition to diuretic, or in elderly, initially 6.25 mg twice daily (first dose at bedtime); usual maintenance dose 25 mg twice daily; max. 50 mg twice daily (rarely 3 times daily in severe hypertension)

Heart failure (adjunct), initially 6.25–12.5 mg under close medical supervision; usual maintenance dose 25 mg 2–3 times daily; usual max. 150 mg daily

Prophylaxis after infarction in clinically stable patients with asymptomatic or symptomatic left ventricular dysfunction, initially 6.25 mg, starting as early as 3 days after infarction, then increased over several weeks to 150 mg daily (if tolerated) in divided doses .

Contraindications:

- Hypersensitivity, Reno vascular disease and pregnancy.

Side effects:

- Skin rash, loss of taste, neutropnea, nausea, vomiting,
- Hypotension, proteinuria, renal failure and hyperkalemia.

Nursing considerations:

- In case of overdose, give normal saline to restore BP.
- Should not be discontinued without Dr. Instructions.
- Obtain baseline hematological studies, liver & renal functions tests prior to beginning the treatment.
- Determine client understands of the therapy and if he/she takes other medications.
- Observe client closely for hypotension 3 hours after the initial dose.
- In case of hypotension, place client in supine position and give IV saline infusion.
- Withhold potassium sparing diuretics and consult with physician (hyperkalemia may occur).
- Take captopril 1 hour before meal or on an empty stomach.
- Report skin rash, heartburn, and chest pain to physician.
- Explain to client that he may develop loss of taste for 2-3 months, if it persists, notify the physician.

19. Carvedilol:

Trade name: Coreg, Dilatrend.

Class: antihypertensive, beta blockers.

Pregnancy: (Category C)

Action:

- Blocks stimulation of beta1 (myocardial) and beta2 (pulmonary, vascular, and uterine) -adrenergic receptor sites
- Also has alpha1 blocking activity, which may result in orthostatic hypotension.

Uses:

- Management of hypertension.
- Management of CHF (due to ischemia or cardiomyopathy) with digoxin, diuretics, and ACE inhibitors.

Dose

Hypertension, initially 12.5 mg once daily, increased after 2 days to usual dose of 25 mg once daily; if necessary may be further increased at intervals of at least 2 weeks to max. 50 mg daily in single or divided doses; *ELDERLY* initial dose of 12.5 mg daily may provide satisfactory control Angina, initially 12.5 mg twice daily, increased after 2 days to 25 mg twice daily

Adjunct in heart failure initially 3.125 mg twice daily (with food), dose increased at intervals of at least 2 weeks to 6.25 mg twice daily, then to 12.5 mg twice daily, then to 25 mg twice daily; increase to highest dose tolerated, max. 25 mg twice daily in patients with severe heart failure or body-weight less than 85 kg and 50 mg twice daily in patients over 85 kg

Contraindications:

- Uncompensated CHF.
- Pulmonary edema.
- Cardiogenic shock.
- Bradycardia or heart block.
- Severe hepatic impairment or bronchial asthma/bronchospasm.

Side effects:

- Carvedilol may cause hyperglycemia, tiredness, weakness, lightheadedness, dizziness, headache,

- diarrhea, nausea, vomiting, vision changes, joint pain, difficulty falling asleep or staying asleep
- Cough, dry eyes, numbness, burning, or tingling in the arms or legs

Nursing considerations:

- Teach patient and family how to check pulse and blood pressure.
- May cause drowsiness or dizziness. Caution patients to avoid driving or other activities that require alertness until response to the drug is known.
- Patients with diabetes should closely monitor blood sugar
- Advise patient to notify health care professional if slow pulse, difficulty breathing, wheezing, cold hands and feet, dizziness, confusion, depression, rash, fever, sore throat, unusual bleeding, or bruising occurs.
- Hypertension: Reinforce the need to continue additional therapies for hypertension (weight loss, sodium restriction, stress reduction, regular exercise, moderation of alcohol consumption, and smoking cessation).

****

20. Cefazolin:

Trade name: Ancef, Kefzol.

Class: Antibiotic "cephalosporines" FIRST GENERATION

Pregnancy: (Category B)

Action: Bind to bacterial cell wall membrane, causing cell death.

Uses:

Treatment of:

- Skin and skin structure infections (including burn wounds)
- Pneumonia.
- Otitis media.
- Urinary tract infections.
- Bone and joint infections.
- Septicemia (including endocarditic) caused by susceptible organisms.
- Perioperative prophylaxis.

Dose

By intramuscular injection or intravenous injection or infusion, 0.5–1 g every 6–12 hours; CHILD, 25–50 mg/kg daily (in divided doses), increased to 100 mg/kg daily in severe infections

Contraindications:

- Hypersensitivity to cephalosporin or Penicillin, renal failure, Pregnancy, Lactation.

Side effects:

- Nausea, vomiting, diarrhea, anorexia, abdominal pain, flatulence, skin rashes super-infection, heartburn, sore mouth, bone marrow depression: (Decrease WBC, decreased platelets, decreased Hct), Nephrotoxicity, (pain, abscess at injection site, phlebitis and inflammation at IV site.

Nursing considerations:

- Infuse over 30 minutes unless otherwise indicated.
- Therapy should be continued for at least 2-3 days after symptoms of infection have disappeared.
- Assess client with a history of hypersensitivity reaction. "for penicillin or cephalosporin."
- Assess client financial status. These drugs are usually expensive.
- If GI upset occurs administer. Drugs with meals. "Should be administered on empty stomach".
- Obtain liver & renal studies.

****

21. Cefotaxime :

Trade name: claforan.

Class: Antibiotic "cephalosporines "(third generation).

Pregnancy: (Category B)

Action: Bind to bacterial cell wall membrane, causing cell death.

Uses:

- Pneumonia – GU tract infections - meningitis, Peritonitis, septicemia, pelvic cellulitis – endometritis.

Dose

by intramuscular or intravenous injection or by intravenous infusion, 1 g every 12 hours increased in severe infections (e.g. meningitis) to 8 g daily in 4 divided doses; higher doses

(up to 12 g daily in 3–4 divided doses) may be required; NEONATE 50 mg/kg daily in 2–4 divided doses increased to 150–200 mg/kg daily in severe infections; CHILD 100–150 mg/kg daily in 2–4 divided doses increased up to 200 mg/kg daily in very severe infections

Gonorrhea, 500 mg as a single dose

Contraindications:

- Hypersensitivity to cephalosporin or Penicillin**.**

Side effects:

CNS: seizures (high doses).

GI: pseudomembraneous colitis, diarrhea, nausea, vomiting, cramps, pseudolithiasis (ceftriaxone).

Derm: rashes, urticaria.

Hemat: bleeding (increased with cefoperazone), blood dyscrasias, hemolytic anemia.

Local: pain at IM site, phlebitis at IV site.

Misc: allergic reactions including anaphylaxis and serum sickness, super infection.

Nursing considerations:

- Should not be mixed with amino glycosides. (each should be given separately)
- For I.V. use, should be mixed with 10 ml sterile water & administer over 3-5 minutes.

****

22. Ceftazidime :

Trade name: Ceptaz, Fortum, Tazicef, Tazidime

Class: Antibiotic "cephalosporines" *third-generation*

Pregnancy: (Category B)

Action : Bind to bacterial cell wall membrane, causing cell death.

Uses:

Ceftazidime eliminates bacteria that cause many kinds of infections, including lung, skin, bone, joint, stomach, blood, gynecological, and urinary tract infections

Dose

by deep intramuscular injection or intravenous injection or infusion, 1 g every 8 hours or 2 g every 12 hours; 2 g every 8–12 hours or 3 g every 12 hours in severe infections; single doses over 1 g intravenous route only; elderly usual max. 3 g daily; child up to 2 months 25–60 mg/kg daily in 2 divided doses, over 2 months 30–100 mg/kg daily in 2–3 divided doses; up to 150 mg/kg daily (max. 6 g daily) in 3 divided doses if immuno-compromised or meningitis; intravenous route recommended for children

Urinary-tract and less serious infections, 0.5–1 g every 12 hours

Pseudomonal lung infection in cystic fibrosis, adult 100–150 mg/kg daily in 3 divided doses; child up to 150 mg/kg daily (max. 6 g daily) in 3divided doses; intravenous route recommended for children

Surgical prophylaxis, prostatic surgery, 1 g at induction of anesthesia repeated if necessary when catheter removed

Contraindications:

- Hypersensitivity to cephalosporin

Side effects:

- Diarrhea, stomach pain, upset stomach, vomiting.

Nursing considerations:

- Infuse over 30 minutes unless otherwise indicated.
- Therapy should be continued for at least 2-3 days after symptoms of infection have disappeared.
- Assess client with a history of hypersensitivity reaction. “for penicillin or cephalosporin.”
- Assess client financial status. These drugs are usually expensive.
- Obtain liver & renal studies.

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23. Ceftriaxone:

Trade name: Rocephin

Class: Antibiotic "cephalosporines" *third-generation*

Pregnancy: (Category B)

Action: Bind to bacterial cell wall membrane, causing cell death.

Uses:

- Pneumonia, UTI, infections of skin, bone & abdomen. Meningitis, bacterial septicemia, pre-op. prophylaxis.

Dose

by deep intramuscular injection, or by intravenous injection over at least 2–4 minutes, or by intravenous infusion, 1 g daily; 2–4 g daily in severe infections; intramuscular doses over 1 g divided between more than one site , Neonate by intravenous infusion over 60 minutes, 20–50 mg/kg daily (max. 50 mg/kg daily) Infant and child under 50 kg, by deep intramuscular injection, or by intravenous injection over 2–4 minutes, or by intravenous infusion, 20–50 mg/kg daily; up to 80 mg/kg daily in severe infections; doses of 50 mg/kg

and over by intravenous infusion only; 50 kg and over, adult dose

Uncomplicated gonorrhea, by deep intramuscular injection, 250 mg as a single dose.

Surgical prophylaxis, by deep intramuscular injection or by intravenous injection over at least 2–4 minutes, 1 g at induction; colorectal surgery, by deep intramuscular injection or by intravenous injection over at least 2–4 minutes or by intravenous infusion, 2 g at induction; intramuscular doses over 1 g divided between more than one site

Contraindications:

- Hypersensitivity to cephalosporin or Penicillin ,renal failure

Side effects:

- Nausea, vomiting, diarrhea, anorexia, abdominal pain, flatulence, skin rashes super-infection, heartburn, sore mouth, bone marrow depression.

Nursing considerations:

- I.M. injection should be deep into the body of large muscle.
- I.V. injection should be diluted.
- For stability of solution the package insert should be checked carefully.
- Dosage should be maintained for at least 2 days after symptoms of infection have disappeared (usual course is 4-14 days).

****

24. Cefuroxime :

Trade name: Zinacef

Class: Antibiotic "cephalosporines" (second generation)

Pregnancy: (Category B)

Action: Bind to bacterial cell wall membrane, causing cell death.

Uses:

- Pharyngitis, tonsillitis , Otitis media ,Lower respiratory tract infections, UTIs Dermatologic infections, Treatment of early Lyme disease ,Lower respiratory tract infections, influenza, Septicemia, Meningitis Bone and joint infections, Perioperative prophylaxis .

Dose : by mouth (as cefuroxime axetil), 250 mg twice daily in most infections including mild to moderate lower respiratory-tract infections (e.g. bronchitis); doubled for more severe lower respiratory-tract infections or if pneumonia suspected

Urinary-tract infection, 125 mg twice daily, doubled in pyelonephritis

Gonorrhea, 1 g as a single dose

Child over 3 months, 125 mg twice daily, if necessary doubled in child over 2 years with

otitis media

Lyme disease, adult and child over 12 years, 500 mg twice daily for 20 days By intramuscular injection or intravenous injection or infusion, 750 mg every 6–8 hours; 1.5 g every 6–8 hours in severe infections; single doses over 750 mg intravenous route only

Child usual dose 60 mg/kg daily (range 30–100 mg/kg daily) in 3–4 divided doses (2–3 divided doses in neonates)

Gonorrhea, 1.5 g as a single dose by intramuscular injection (divided between 2 sites)

Surgical prophylaxis, 1.5 g by intravenous injection at induction; up to 3 further doses of 750 mg may be given by intramuscular or intravenous injection every 8 hours for high-risk procedures

Meningitis, 3 g intravenously every 8 hours; Child 200–240 mg/kg daily (in 3–4 divided doses) reduced to 100 mg/kg daily after 3 days or on clinical improvement; Neonate 100 mg/kg daily reduced to 50 mg/kg daily

Contraindications:

Allergy to cephalosporin or penicillins, renal failure, lactation, pregnancy

Side effects:

- CNS: Headache, dizziness, lethargy, paresthesias
- GI: Nausea, vomiting, diarrhea, anorexia, abdominal pain, flatulence, pseudo membranous colitis, liver toxicity
- Hematologic: Bone marrow depression: decreased WBC, decreased platelets, decreased Hct.
- GU: Nephrotoxicity
- Hypersensitivity: Ranging from rash to fever to anaphylaxis, serum sickness reaction.

Nursing considerations:

- Culture infection, arrange for sensitivity tests before and during therapy if expected response is not seen.
- Give oral drug with food to decrease GI upset and enhance absorption.
- Give oral drug to children who can swallow tablets; crushing the drug results in a bitter, unpleasant taste.
- Have vitamin K available in case hypoprothrombinemia occurs.
- Discontinue if hypersensitivity reaction occurs.

25. Chloramphenicol :

Trade name: Chloromycetin

Class: antibiotic

Pregnancy: (Category C)

Action: it inhibits protein synthesis in bacteria by binding to ribosome.

Uses:

- Not to be used for trivial infections as prophylaxis of infection
- Cold, throat infections or flu.
- Treatment of choice for typhoid fever (not for carrier state).
- Meningitis due to hemophilus influenza, pneumocoeoi or
- Miningococei.
- Skin infections (topically).
- Brain abscesses.

Dose : by mouth or by intravenous injection or infusion, 50 mg/kg daily in 4 divided doses (exceptionally, can be doubled for severe infections such as septicemia and meningitis, providing high doses reduced as soon as clinically indicated); Child, haemophilus epiglottitis and pyogenic meningitis, 50–100 mg/kg daily in divided doses (high dosages decreased as soon as clinically indicated); Infants under 2 weeks 25 mg/kg daily (in 4 divided doses),

2 weeks–1 year 50 mg/kg daily (in 4 divided doses)

Contraindications:

- Hypersensitivity to chloramphenicol.
- Pregnancy
- Nursing mothers.
- Renal and hepatic failure.

Side effects:

- A plastic anemia, pancytopnea, nausea, vomiting abdominal distention, “progressive pallid cyanoses, ashen gray color, tachypnea , vasomotor collapse & death”, Gray syndrome in infants, super infections.

Nursing considerations:

- Administer I.V. as 10% solution over at least 1 min.
- Note any history of hypersensitivity & other contraindications, & if Client takes antidiabetic or other medications that cause bone marrow depression.
- Neonates should be observed closely (greater hazards of toxicity).
- Arrange for further hematologic studies to be conducted every 2 days to detect early signs of bone marrow depression.

- The drug should be taken at regular intervals to be most effective.
- The drug should be taken 1 hr before or 2 hr after meals (if GI upset Occurs it could be taken with the food).

****

26. Chlorpromazine:

Trade name: Largactil

Class: Antipsychotic, phenothiazine

Pregnancy: (Category C)

Action: Act by blocking dopamine receptors. It has significant antiemetic effect, hypoteinsive, sedative & anticholenergic effect.

Uses:

- Acute & chronic psychosis (such as schizophrenia, mania & manic
- Depression.
- Preanasthetic.
- Intractable hiccoughs.
- Nausea & vomiting.

Dose : by mouth psychomotor agitation, excitement, and violent or dangerously impulsive behavior initially 25 mg 3 times daily (or 75 mg at night), adjusted according to response, to usual maintenance dose of 75–300 mg daily

Intractable hiccup, oral 25–50 mg 3–4 times daily

By deep intramuscular injection, (for relief of acute symptoms, 25–50 mg every 6–8 hours; Child, 1–5 years 0.5 mg/kg every 6–8 hours (max. 40 mg daily); 6–12 years 0.5 mg/kg every 6–8 hours (max. 75 mg daily)

Induction of hypothermia (to prevent shivering), by deep intramuscular injection, 25–50 mg every 6–8 hours; Child 1–12 years, initially 0.5–1 mg/kg, followed by maintenance 0.5 mg/kg every 4–6 hours.

Contraindications:

- Sever depression, coma.
- Bone marrow depression.
- Patients with history of seizures & on anticonvulsant therapy.
- Hepatic & renal diseases.
- Prostatic hypertrophy.
- Dehydration - glaucoma, measles.

Side effects:

- Depression, dizziness, seizures, gynecomastia. Orthostatic hypotension, bronchospasm, larlynyospasm tardive dyskinesia, photosensitivity, leukopnea, aplastic anemia, and dry mouth.

Nursing considerations:

- Shouldn't be used to treat nausea & vomiting in children less than 6 months of age.
- Should avoid getting solution on hands or clothing (it will cause dermatitis).
- Solutions with marked discoloration should be discarded.
- Note any history of seizures.
- Take liver & kidney function test periodically.
- Document & rotate injection sites.
- Report side effects immediately.
- Determine age of male patients & assess for prostatic hypertrophy.

****

27. Ciprofloxacin Hydrochloride:

Trade name: ciproxin

Class: Antibacterial, quinolone derivative

Pregnancy: (Category C)

Action: is a synthetic quinolone with broad- spectrum bactericidal activity, inhibits the synthesis of bacterial DNA by inhibiting the enzyme DNA gyrase.

Uses:

- UIT, infectious diarrhea
- Infection of lower respiratory tract, bone, joints & skin.

Dose : by mouth, respiratory-tract infections, 250–750 mg
Twice daily, Urinary-tract infections, 250–500 mg twice
Daily (100 mg twice daily for 3 days in acute
uncomplicated cystitis in women)

Chronic prostatitis, 500 mg twice daily for 28 days

Gonorrhea, 500 mg as a single dose

Pseudomonal lower respiratory-tract infection in cystic fibrosis, 750 mg twice daily; CHILD 5–17 years, up to 20 mg/kg twice daily (max. 1.5 g daily)

Most other infections, 500–750 mg twice daily

Surgical prophylaxis, 750 mg 60–90 minutes before procedure

Prophylaxis of meningococcal meningitis, [not licensed for this indication]

500 mg as a single dose; Child 5–12 years 250 mg

By intravenous infusion (over 30–60 minutes; 400 mg over 60 minutes), 200–400 mg twice daily, Child 20 mg/kg daily in 2 divided doses

Pseudomonal lower respiratory-tract infection in cystic fibrosis, 400 mg twice daily; CHILD 5–17 years, up to 10 mg/kg 3 times daily (max. 1.2 g daily)

Child not recommended but where benefit outweighs risk, by mouth, 10–30 mg/kg daily in 2 divided doses or by intravenous infusion, 8–16 mg/kg daily in 2 divided doses

Anthrax (treatment and post-exposure prophylaxis, see notes above), by mouth, 500 mg twice daily; child 30 mg/kg daily in 2 divided doses (max. 1g daily)

Contraindications:

- Hypersensitivity - children - lactation.

Side effects:

- Nausea vomiting. Dysphasia, crystalluria,
- Hematuria, Rashes, bad taste, GI bleeding,
- Headache, insomnia.

Nursing considerations:

- Give medication 2 hr after meals.
- Stress importance of drinking increased amounts of fluids to keep urine acidic & to minimize the risk of crystalluria.

****

28. Clindamycin phosphate:

Trade name: Dalacin

Class: antibiotic, clindamycin

Pregnancy: (Category B)

Action: suppress protein synthesis by microorganisms by binding to ribosomes. It is both bacteriostatic & bactericidal.

Uses:

- Serious respiratory tract infections. (lung abscess, pneumonia).
- Serious skin infections.
- Septicemia.

- Osteomyelitis caused by staphylococci.
- Used topically for inflammatory acne vulgaris .

Dose : by mouth, 150–300 mg every 6 hours; up to 450 mg every 6 hours in severe infections; CHILD, 3–6 mg/kg every 6 hours

N.B

Patients should discontinue immediately and contact doctor if diarrhea develops; capsules should be swallowed with a glass of water.

By deep intramuscular injection or by intravenous infusion, 0.6–2.7 g daily (in 2–4 divided doses); life-threatening infection, up to 4.8 g daily; single doses above 600 mg by intravenous infusion only; single doses by intravenous infusion not to exceed 1.2 g

CHILD over 1 month, 15–40 mg/kg daily in 3–4 divided doses; severe infections, at least 300 mg daily regardless of weight.

Contraindications:

- Hypersensitivity
- Minor bacterial infections.
- Pregnancy.

Side effects:

- Nausea, vomiting, diarrhea, abdominal pain, tenesmus.
- Loss of weight, pseudo membranous colitis, skin rashes.
- Hypotension.
- Thrombophlebitis following I.V. use.

Nursing considerations:

- Give parenteral drug to hospitalized client only.
- Dilute I.V. injections. If I.M., inject medication deeply.
- Don’t refrigerate solution (because it becomes thick) .
- Before use, take full history & not signs of allergy.
- Be prepared to manage colitis which can occur 2-9 days or several weeks after initiation of therapy. Which includes: fluids, electrolytes, Protein supplement, corticosteroids, and Vancomycin (as ordered).
- During I.V. administration, observe for signs of hypotension.
- Administer only on an empty stomach. (With a full glass of water to prevent esophageal ulceration).

****

29. Cloxacillin:

Trade name: Orbenin

Class: antibiotic "penicillinase-resistant penicillins"

Pregnancy: (Category B)

Action: Inhibit bacterial cell wall synthesis.

Uses:

- Infections caused by penicillinase- producing staphylococci, streptococci, pneumococci.
- Osteomylitis
- pneumonia
- infected wounds & burns
- Septic arthritis.

Dose : by mouth, 250–500 mg every 6 hours, at least 30 minutes before food; Child under 2 years quarter adult dose; 2–10 years half adult dose

By intramuscular injection, 250–500 mg every 6 hours; Child under 2 years quarter adult dose; 2–10 years half adult dose

By slow intravenous injection or by intravenous infusion, 0.25–2 g every 6 hours; Child under 2 years quarter adult dose; 2–10 years half adult dose

Endocarditis 12 g daily in 6 divided doses for 4 weeks

Osteomyelitis up to 8 g daily in 3–4 divided doses

Contraindications:

Hypersensitivity to penicillins & cephalosporin.

Side effects:

- Allergic: skin rashes, pruritis, wheezing, fever…. .
- Diarrhea, abdominal cramps pain, nausea, vomiting.
- Psendomembranous colitis, thrombocytopenia, leucopenia
- Thrombophlebitis + Electrolytes imbalance following I.V. use.
- Hepatotoxicity.

Nursing considerations:

- Administer on an empty stomach.
- Refrigerate reconstituted solution & discard remaining amount after 14 days.

- N.B.: To prepare oral suspension, add amount of water stated on label and shake well.
- Shake the bottle well before each use.

****

30. Dexamethasone:

Trade name: dexacort

Class: adrenocorticosteroid –synthetic, glucocorticoid type

Pregnancy: (Category C/D if used in 1st trimester)

Action:

- They are a group of natural hormones produced by the adrenal cortex.
- They are used for a variety of therapeutic purposes.
- Many slightly modified synthetic variants are available today.
- Some patients respond better to one substance than to another.
- These hormones influence many metabolic pathways & all organ systems & are essential for survival.
- The release of corticosteroids is controlled by hormones such as corticotropin- releasing factor produced by the hypothalamus & ACTH produced by the anterior pituitary.

Uses:

- Replacement therapy: adrenal insufficiency (Addison's disease) .
- Rheumatic disorders: rheumatoid arthritis & osteoarthritis.
- Collagen diseases: systemic lapus erythematosus, rheumatic cardiac.
- Allergic diseases: drug hypersensitivity, urticarial transfusion reaction.
- Respiratory diseases: bronchial asthma, rhinitis.
- Ocular diseases : allergic & inflammatory conjunctivitis, keratitis …
- Dermatological diseases: psoriasis, contact dermatitis, urticaria.
- Diseases of the GIT: ulcerative colitis.
- Nervous system: Myasthenia gravis.
- Malignancies: leukemia, lymphoma.
- Nephrotic syndrome.
- Hematologic diseases: hemolytic anemia, thrombocytopenic purpura.
- Miscellaneous: septic shock, liver cirrhosis, stimulation of surfactant
- Production, prevention of organ rejection.

Dose

By mouth, usual range 0.5–10 mg daily;

by intramuscular injection or slow intravenous injection or infusion (as dexamethasone phosphate), initially 0.5–20 mg; CHILD 200–500 micrograms/kg daily

Cerebral edema (as dexamethasone phosphate), by intravenous injection, 10 mg initially, then 4 mg by intramuscular injection every 6 hours as required for 2–10 days

Shock (as dexamethasone phosphate), by intravenous injection or infusion, 2–6 mg/kg, repeated if necessary after 2–6 hours

Note. Dexamethasone 1 mg = dexamethasone phosphate 1.2 mg = dexamethasone sodium phosphate 1.3 mg

Contraindications:

- If infection is suspected (Mask signs & symptoms).
- Peptic ulcer.
- Acute glomerulonephritis.
- Cushing's syndrome.
- Congestive heart failure.
- Hypertension.
- Hyperlipidemia.

Side effects:

- Edema, alkalosis, hypokalemia, hypertension, CHF muscle wasting, weakness, osteoporosis, nausea & vomiting.
- Headache, hypercholesterolemia, hirsutism, amenorrhea, depression.
- Redistribution of body fats: thin extremities and fat trunk, moon-like face, buffalo hump.

Nursing considerations:

- Administer oral forms with food to minimize ulcerogenic effect.
- For chronic use, give the smallest dose possible.
- Corticosteroids should be discontinued gradually if used chronically.
- Document baseline weight, B.P., Pulse & temperature.
- Frequently take BP, monitor body weight (signs of Na+ & H_2O retention).
- Periodic serum electrolytes, blood sugar monitoring.
- Report signs & symptoms of side effects (Cushing-like syndrome).
- Discuss with female client potentials of menstrual difficulties.
- Instruct the client to take diet high in protein & potassium.

- Instruct the client to avoid falls & accidents (osteoporosis causes
- Pathological fracture).
- Remind the client to carry a card identifying the drug being used.
- Stress the need for regular medical supervision.
- Advice the client to delay any vaccination while taking these medications (Weakened immunity).
- Explain the need to maintain general hygiene & cleanliness to prevent Infection.

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31. Diazepam :

Trade name: Valium, assival.

Class: anti –convulsant, sedative anxiolytic agent, benzodiazepine

Pregnancy: (Category D)

Action:

- The anxiolytic effect is believed to be mediated through the action of benzodiazepine to increase the inhibitory action of GABA "Gamma amino butyric acid" inhibit CNS neurotransmitter.
- The drug is metabolized in the liver & excreted through urine.

Uses:

- Symptomatic relief of anxiety & tension.
- Alcohol withdrawal.
- Muscle relaxant.
- Anticonvulsive.
- Preoperatively.
- Before gastrescopy or esophagoscopy.
- Treatment of status epilepticus.
- Relief of facial muscle spasm.

Dose

By intravenous injection, 10–20 mg at a rate of 0.5 mL (2.5 mg) per 30 seconds, repeated if necessary after 30–60 minutes; may be followed by intravenous infusion to max. 3 mg/kg over 24 hours;

Child 0.2-0.3 mg/kg or 1 mg per year of age

by rectum as rectal solution, Adult and Child over 10 kg 0.5 mg/kg; Elderly 0.25mg/kg

Contraindications:

- Hypersensitivity.

- Acute narrow angle glaucoma.
- Pregnancy.
- Shock, coma.
- Alcoholic intoxication (to avoid respiratory of depression).

Side effects:

- Drowsiness, fatigue,
- ataxia,
- hypotension,
- visual disturbances, headache,
- Phlebitis at injection site.

Nursing considerations:

- Stress that drug may reduce pt's ability to handle dangerous equipment.
- Avoid alcohol ingestion.
- Don't stop taking the medication suddenly, withdraw drug gradually.
- Monitor B.P. before & after administration.

****

32. Diclofenac Sodium:

Trade name:

Diclofenac sodium: Voltaren, Rufenal, Novo-Difenac (CAN), Nu-Diclo (CAN), , Voltaren Ophtha (CAN), Voltaren-XR

Diclofenac potassium: Cataflam, Voltaren Rapid (CAN)

Drug classes

- Analgesic (non-narcotic)
- Antipyretic
- Anti-inflammatory agent
- Nonsteroidal anti-inflammatory drug (NSAID)

Pregnancy: (Category B /D if used in 3rd trimester or near delivery.]

Action: Inhibits prostaglandin synthetase to cause antipyretic and anti-Inflammatory effects; the exact mechanism is unknown.

Uses:

- Rheumatoid arthritis
- Osteoarthritis.

- Acute or long-term treatment of mild to moderate pain, including dysmenorrheal
- Ankylating spondylitis
- Other musculoskeletal diseases.
- Dental pain
- Strains & sprains.

Dose by mouth, 75–150 mg daily in 2–3 divided doses

By deep intramuscular injection into the gluteal muscle, acute exacerbations of pain and postoperative pain, 75 mg once daily (twice daily in severe cases) for max. Of 2 days

Ureteric colic, 75 mg then a further 75 mg after 30 minutes if necessary

by intravenous infusion (in hospital setting), 75 mg repeated if necessary after 4–6 hours for max. 2 days

Prevention of postoperative pain, initially after surgery 25–50 mg over 15–60 minutes then 5 mg/hour for max. 2 days

by rectum in suppositories, 75–150 mg daily in divided doses

Max. Total daily dose by any route 150 mg

Child 1–12 years, juvenile arthritis, by mouth or by rectum, 1–3 mg/kg daily in divided doses (25 mg e/c tablets, 12.5 mg and 25 mg suppositories only)

Contraindications:

1- Children less than14 years of age.
2- Lactation.
3- Hypersensitivity (asthma, rashes, rhinitis).
4- Uses with caution in patients with a history of GI disease & reduced renal functions.

Side effects:

- CNS: Headache, dizziness, somnolence, insomnia, fatigue, tiredness, dizziness, tinnitus, ophthalmologic effects
- GI: Nausea, dyspepsia, GI pain, diarrhea, vomiting, constipation, flatulence
- Hematologic: Bleeding, platelet inhibition with higher doses
- GU: Dysuria, renal impairment
- Dermatologic: Rash, pruritus, sweating, dry mucous membranes, stomatitis
- Other: Peripheral edema, anaphylactoid reactions to fatal anaphylactic shock

Nursing considerations:

- Give on full stomach to avoid GIT irritation.
- When given IM, Give it deep into a large muscle because drug is very irritant.

- Note any history of allergic responses to aspirin or nonsteroidal anti-inflammatory agents. {NS.AID.}
- Note the age of the client.
- Determine if patient is taking oral hypoglycemic or insulin and document it.
- Take these agents with milk or meal or antacids as prescribed.
- Encourage patient to take drug regularly.
- Report signs of GI irritation, sore throat, fever, rash, itching, weight gain, swelling in ankles or fingers, changes in vision; black, tarry stools, tinnitus, and rashes – etc.
- Dizziness, drowsiness can occur (avoid driving or using dangerous machinery while on this drug).
- If the client has Diabetes Mellitus, explain the possible in increasing hypoglycemic effect of the drugs, to test urine & blood for glucose. To adjust dose of these agents.

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33. Digoxin :

Trade name: Lanoxicaps, Lanoxin, Novo-Digoxin (CAN)

Drug classes:

- Cardiac glycoside
- Cardiotonic agent

Pregnancy: (Category C)

Therapeutic actions

Increases intracellular calcium and allows more calcium to enter the myocardial cell during depolarization via a sodium---potassium pump mechanism; this increases force of contraction (positive inotropic effect), increases renal perfusion (seen as diuretic effect in patients with CHF), decreases heart rate (negative chronotropic effect), and decreases AV node conduction velocity.

Indications

- CHF
- Atrial fibrillation
- Atrial flutter
- Paroxysmal atrial tachycardia

Dose

by mouth, rapid digitalization, 1–1.5 mg in divided doses over 24 hours; less urgent digitalization, 250–500 micrograms daily (higher dose may be divided), Maintenance, 62.5–500 micrograms daily (higher dose may be divided) according to renal function and, in atrial fibrillation, on heart-rate response; usual range, 125–250 micrograms daily (lower dose may be appropriate in elderly)

Emergency loading dose by intravenous infusion, 0.75–1 mg over at least 2 hours then maintenance dose by mouth on the following day

Contraindications:

- Contraindications: allergy to digitalis preparations, ventricular tachycardia, ventricular fibrillation, heart block, sick sinus syndrome, IHSS, acute MI, renal insufficiency and electrolyte abnormalities (decreased K^+, decreased Mg^{++}, increased Ca^{++}).
- Use cautiously with pregnancy and lactation.

Side effects:

- CNS: Headache, weakness, drowsiness, visual disturbances
- GI: GI upset, anorexia
- CV: Arrhythmias

Nursing Considerations

- Monitor apical pulse for 1 min before administering; hold dose if pulse <60 in adult or <90 in infant, retake pulse in 1 h. If adult pulse remains <60 or infant <90, hold drug and notify prescriber. Note any change from baseline rhythm or rate.
- Check dosage and preparation carefully.
- Avoid IM injections, which may be very painful.
- Follow diluting instructions carefully, and use diluted solution promptly.
- Avoid giving with meals; this will delay absorption.
- Have emergency equipment ready; have K+ salts, lidocaine, phenytoin, atropine, and cardiac monitor on standby in case toxicity develops.
- Monitor for therapeutic drug levels: 0.5---2 ng/mL.

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34. Dailtiazem hydrochloride :

Trade name: Alti-Diltiazem ,Apo-Diltiaz, Cardizem, Dilacor XR, Gen-Diltiazem , Novo-Diltazem , Nu-Diltiaz , Tiamate, Tiazac

Drug classes

- Calcium channel-blocker

- Antianginal agent
- Antihypertensive

Pregnancy: (Category C)

Action: Calcium-channel blockers "anti anginal, antihypertensive"

Inhibits the movement of calcium ions across the membranes of cardiac and arterial muscle cells, resulting in the depression of impulse formation in specialized cardiac pacemaker cells, slowing of the velocity of conduction of the cardiac impulse, depression of myocardial contractility, and dilation of coronary arteries and arterioles and peripheral arterioles; these effects lead to decreased cardiac work, decreased cardiac energy consumption, and in patients with vasospastic (Prinzmetal's) angina, increased delivery of oxygen to myocardial cells.

Indications

- Angina pectoris due to coronary artery spasm (Prinzmetal's variant angina)
- Effort-associated angina; chronic stable angina in patients not controlled by β-adrenergic blockers, nitrates
- Essential hypertension (sustained release)
- Treatment of hypertension (sustained release, Tiamate)
- Paroxysmal supraventricular tachycardia (parenteral)

Dose

Available Forms: Tablets--30, 60, 90, 120 mg; SR capsules--60, 90, 120, 180, 240, 300 mg; injection--25, 50 mg as 5 mg/mL

Evaluate patient carefully to determine the appropriate dose of this drug.

Angina, 60 mg 3 times daily (elderly initially twice daily); increased if necessary to 360 mg daily

Pediatric: Safety and efficacy not established.

Contraindications/cautions

- Allergy to diltiazem,
- impaired hepatic or renal function,
- sick sinus syndrome, hypotension,
- pulmonary congestion, and MI
- heart block (second or third degree), and

- lactation

Side effects

- CNS: Dizziness, light-headedness, headache, asthenia, fatigue
- GI: Nausea, hepatic injury
- CV: Peripheral edema, hypotension, arrhythmias, bradycardia, AV block, asystole
- Dermatologic: Flushing, rash

Clinically important interactions

- Drug-drug
  - Increased serum levels and toxicity of cyclosporine if taken concurrently with diltiazem

Nursing Considerations

- Monitor patient carefully (BP, cardiac rhythm, and output) while drug is being titrated to therapeutic dose; dosage may be increased more rapidly in hospitalized patients under close supervision.
- Monitor BP carefully if patient is on concurrent doses of nitrates.
- Monitor cardiac rhythm regularly during stabilization of dosage and periodically during long-term therapy.
- Report irregular heart beat, shortness of breath, swelling of the hands or feet, pronounced dizziness, constipation.

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35. Dobutamine hydrochloride:

Trade name: Dobutrex

Drug classes:

- Sympathomimetic
- β_1-selective adrenergic agonist

Pregnancy: (Category B)

Therapeutic actions:

Positive inotropic effects are mediated by β_1- adrenergic receptors in the heart; increases the force of myocardial contraction with relatively minor effects on heart rate, arrhythmogenesis; has minor effects on blood vessels.

Indications

- For inotropic support in the short-term treatment of adults with cardiac decompensation due to depressed contractility, resulting from either organic heart disease or from cardiac surgical procedures
- Investigational use in children with congenital heart disease undergoing diagnostic cardiac catheterization, to augment CV function

Dosage

- Available Forms: Injection 12.5 mg/mL.
- Administer only by IV infusion.
- Titrate on the basis of the patient’s homodynamic/renal response.
- Close monitoring is necessary.

Adult:

2.5---15 µg/kg/min IV is usual rate to increase cardiac output; rarely, rates up to 40 µg/kg per minute are needed.

IV facts

- **Preparation:** Reconstitute by adding 10 mL Sterile Water for Injection or 5% Dextrose Injection to 250-mg vial. If material is not completely dissolved, add 10 mL of diluent. Further dilute to at least 50 mL with 5% Dextrose Injection, 0.9% Sodium Chloride Injection, or Sodium Lactate Injection. Store reconstituted solution under refrigeration for 48 h or at room temperature for 6 h. Store final diluted solution in glass or via flex container at room temperature. Stable for 24 h. Do not freeze. (Note: drug solutions may exhibit a color that increases with time; this indicates oxidation of the drug, not a loss of potency.)
- **Infusion:** May be administered through common IV tubing with dopamine, lidocaine, tobramycin, nitroprusside, potassium chloride, or protamine sulfate. Titrate rate based on patient response--P, BP, rhythm; use of an infusion pump is suggested.
- **Incompatibilities:** Do *not* mix drug with alkaline solutions, such as 5% Sodium Bicarbonate Injection; do *not* mix with hydrocortisone sodium succinate, cefazolin, cefamandole, neutral cephalothin, penicillin, sodium ethacrynate; sodium heparin.
- **Y-site Incompatibilities:** Do not mix with acyclovir, alteplase, aminophylline, foscarnet.

Adverse effects

- CNS: Headache
- GI: Nausea
- CV: Increase in heart rate, increase in systolic blood pressure, increase in ventricular ectopic beats (PVCs), anginal pain, palpitations, shortness of breath

Clinically important interactions

- Drug-drug

  - Increased effects with TCAs (eg, imipramine), furazolidone, methyldopa
  - Risk of severe hypertension with β-blockers
  - Decreased effects of guanethidine with dobutamine

Nursing Considerations

- Arrange to digitalize patients who have atrial fibrillation with a rapid ventricular rate before giving dobutamine--dobutamine facilitates AV conduction.
- Monitor urine flow, cardiac output, pulmonary wedge pressure, ECG, and BP closely during infusion; adjust dose/rate accordingly.

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36. Dopamine Hydrochloride:

Trade names: Intropin, docard

Class: Direct & indirect acting adrenergic agent.

N.B.: Available for hospital use only on 5 ml ampoules containing 200 mg Doparninc hydrochloride.

Pregnancy: (Category C)

Action:

- It is the immediate precursor of epinephrine in the body.
- It produces direct stimulation of β1 receptors resulting in increasing myocardial contraction, cardiac output ↑ as well as increase renal blood flow & sodium excretion.
- It exerts little effect on diastolic B.P. & induce fewer arrhythrrias that seen on other adrenergic.
- Alpha receptors, which are stimulated by higher doses of dopamine exerts vasodilatation effects which can override the vasodilating effect.
- In higher doses it stimulates alpha receptors leading to peripheral vasoconstriction.

Indications:

- Cardiogenic shocks especially in M.I. associated with sever C.H.F
- Hypotension due to poor cardiac out put.
- Shock associated with septicemia, trauma, heart surgery, renal failure & C.H.F.
- Cardiomyopathy.
- In lower doses (1-5 Mcg/kg/min) used in renal failure.

Contraindications:

- Pheochromocytoma, uncorrected tachycardia, arrhythmias.
- Hypovolemia.
- Safety and efficacy is not established in children.

Side effects:

- GI: Nausea and vomiting.
- CV: Ectopic heart-beats, tachycardia or bradycardia, anginal pain, palpitation, hypotension or hypertension, dyspnea, wide QRS complex.
- Others: headache.

Dosage and administration:

N.B.: This is a potent drug.

It must be diluted before administration to the patient.

Suggested dilution:

Transfer contents of one ampoule (5ml containing 200 mg of dopamine) by aseptic technique to either 250 or 500 ml bottle of sterile I.V. solution (saline, dextrose 5% or ringer lactate). These dilutions will yield a final concentration for administration as follows.

- 250 ml dilution contains 800 mcg\ml of dopamine.
- 500 ml dilution contains 400 mcg\ml of dopamine.

N.B.:

1- Solution stable after dilution for 24 hours.
2- Don't add dopamine to $NaHCO_3$ or other alkaline I.V. solutions since the drug is inactivated in alkaline solution.

Rate of administration.

Through a suitable I.V. needle or a catheter & through an electronic infusion pump, rate is regulated according to required dose.

Dose:

Renal dose: 1-5 Mcg\kg\minute.

Cardiac dose: start initially of 5 Mcg/kg/min then increase by increments up to a rate of 20-50 Mcg/kg/min.

Nursing considerations:

- Administer only by IV INFUSION (Not IV bolus nor IM)
- Drug must be diluted before use.
- Administer drug through a central line or a big vein (vein in the anticupital fossa is preferred over those in the hand).
- Stop the drug by small increments.
- Solution is stable for 24 hrs, protect it from light.
- Monitor B.P. & ECG continuously during drug administration.
- Monitor intake & out put.
- Monitor patient for occurrence of side effects.
- Check I.V. site for sighs of extravasations.
- Drug should be administered through electronic infusion device.

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37. Doxycyclin :

Trade names: Doxylin, Doxypal, Doxypharm, Doxacylin. Apo-Doxy, Doryx, Doxy-Caps, Doxycin Doxychel Hyclate, Doxytec, Novo-Doxylin , Nu-Doxycycline ,Vibra-Tabs, Vibramycin

Class: Antibiotic, tetracycline.

Pregnancy: (Category D)

Therapeutic actions

Bacteriostatic: inhibits protein synthesis of susceptible bacteria, causing cell death

Indications

- Infections caused by rickettsiae; M. pneumoniae; agents of psittacosis, ornithosis, lymphogranuloma venereum and granuloma inguinale; B. recurrentis; H. ducreyi; P. pestis; P. tularensis; B. bacilliformis; Bacteroides; V. comma; V. fetus; Brucella; E. coli; E. aerogenes; Shigella; A. calcoaceticus; H. influenza; Klebsiella; D. pneumoniae; S. aureus
- When penicillin is contraindicated, infections caused by N. gonorrhoeae, T. pallidum, T. pertenue, L. monocytogenes, Clostridium, B. anthracis; adjunct to amebicides in acute intestinal amebiasis

- Oral tetracyclines used for acne, uncomplicated adult urethral, endocervical or rectal infections caused by C. trachomatis
- Unlabeled use: prevention of "traveler's diarrhea" commonly caused by enterotoxigenic E. coli

Contraindications/cautions

- ❖ Allergy to tetracyclines,
- ❖ renal or hepatic dysfunction,
- ❖ pregnancy, and
- ❖ Lactation.

Dosage form:

Available Forms: Tablets--100 mg; powder for oral suspension--25 mg; syrup--50 mg; powder for injection--100, 200 mg

Dose:

- 200 mg on first day, then 100 mg daily; severe infections (including refractory urinary-tract infections), 200 mg daily
- Early syphilis, 100 mg twice daily for 14 days; late latent syphilis 200 mg twice daily for 28 days
- Uncomplicated genital Chlamydia, non-gonococcal urethritis, 100 mg twice daily for 7 days (14 days in pelvic inflammatory disease
- Anthrax (treatment or post-exposure prophylaxis 100 mg twice daily;
- Child (only if alternative antibacterial cannot be given) [unlicensed dose] 5 mg/kg daily in 2 divided doses (max. 200 mg daily)
- Geriatric or Renal Failure Patients:

  IV doses of doxycycline are not as toxic as other tetracyclines in these patients.

Adverse effects

- GI: Fatty liver, liver failure, anorexia, nausea, vomiting, diarrhea, glossitis, dysphagia, enterocolitis, esophageal ulcer
- Hematologic: Hemolytic anemia, thrombocytopenia, neutropenia, eosinophilia, leukocytosis, leukopenia
- Dermatologic: Phototoxic reactions, rash, exfoliative dermatitis (more frequent and more severe with this tetracycline than with any others)

- Dental: Discoloring and inadequate calcification of primary teeth of fetus if used by pregnant women, discoloring and inadequate calcification of permanent teeth if used during period of dental development
- Local: Local irritation at injection site
- Other: Super infections, nephrogenic diabetes insipidus syndrome

Clinically important interactions

- Drug-drug
    - Decreased absorption with antacids, iron, alkali
    - Decreased therapeutic effects with barbiturates, carbamazepine, phenytoins
    - Increased digoxin toxicity with doxycycline
    - Increased nephrotoxicity with methoxyflurane
    - Decreased activity of penicillins
- Drug-food
    - Decreased effectiveness of doxycycline if taken with food, dairy products
- Drug-lab test
    - Interference with culture studies for several days following therapy

Nursing consideration:

- Administer the oral medication without regard to food or meals; if GI upset occurs, give with meals.
- Do not give with antacid, milk, or any product that contains Calcium, Zink, aluminum, magnesium, and ferrous salts, because these products decrease the absorption of the drug.
- Protect patient from light and sun exposure.
- Report rash, itching; difficulty breathing; dark urine or light-colored stools; pain at injection site

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38. Enalapril " Convertin ' :

Trade names: Enalaprilat, Convertin

Drug classes

- Antihypertensive
- ACE inhibitor

Pregnancy: (Category C/ D if used in the 2nd or 3rd trimesters.]

Therapeutic actions

Renin, synthesized by the kidneys, is released into the circulation where it acts on a plasma precursor to produce angiotensin I, which is converted by angiotensin-converting enzyme to angiotensin II, a potent vasoconstrictor that also causes release of aldosterone from the adrenals; both of these actions increase BP. Enalapril blocks the conversion of angiotensin I to angiotensin II, decreasing BP, decreasing aldosterone secretion, slightly increasing serum K^+ levels, and causing Na^+ and fluid loss; increased prostaglandin synthesis also may be involved in the antihypertensive action.

Indications

- Treatment of hypertension alone or in combination with thiazide-type diuretics
- Treatment of acute and chronic CHF
- Treatment of asymptomatic left ventricular dysfunction (LVD)
- Treatment of acute hypertension--IV

Contraindications/cautions

- Contraindication: allergy to enalapril.
- Use cautiously with impaired renal function; salt/volume depletion--hypotension may occur; lactation

Dose

- Hypertension, used alone, initially 5 mg once daily;
- if used in addition to diuretic, in elderly patients, or in renal impairment, initially 2.5 mg daily;
- Usual maintenance dose 10–20 mg once daily;
- In severe hypertension may be increased to max. 40 mg once daily

- Heart failure (adjunct), asymptomatic left ventricular dysfunction, initially 2.5 mg daily under close medical supervision; usual maintenance dose 20 mg daily in 1–2 divided doses

Adverse effects

- CNS: *Headache*, *dizziness*, *fatigue*, insomnia, paresthesias
- GI: Gastric irritation, *nausea*, vomiting, *diarrhea*, abdominal pain, dyspepsia, elevated liver enzymes
- CV: Syncope, chest pain, palpitations, hypotension in salt/volume depleted patients
- Hematologic: Decreased hematocrit and hemoglobin
- GU: Proteinuria, renal insufficiency, renal failure, polyuria, oliguria, urinary frequency, impotence
- Other: Cough, muscle cramps, hyperhidrosis

Clinically important interactions

- Drug-drug
  - Decreased hypotensive effect if taken concurrently with indomethacin, rifampin

Nursing Considerations

- If pt undergoes any types of surgery alert surgeon and mark patient's chart with notice that enalapril is being taken; the angiotensin II formation subsequent to compensatory renin release during surgery will be blocked; hypotension may be reversed with volume expansion.
- Monitor patients on diuretic therapy for excessive hypotension following the first few doses of enalapril.
- Monitor patient closely in any situation that may lead to a fall in BP secondary to reduced fluid volume (excessive perspiration and dehydration, vomiting, diarrhea) because excessive hypotension may occur.
- Arrange for reduced dosage in patients with impaired renal function.
- Monitor patient carefully because peak effect may not be seen for 4 h. Do not administer second dose until checking BP.

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39. Enoxaparin "Clexane ' :

Trade name: Lovenox

Drug classes

- Low-molecular-weight heparin
- Antithrombotic agent

Pregnancy: (Category B)

Therapeutic actions

Low molecular weight heparin that inhibits thrombus and clot formation by blocking factor Xa, factor IIa, preventing the formation of clots.

Indications

- Prevention of deep vein thrombosis, which may lead to pulmonary embolism following hip replacement, knee replacement surgery, abdominal surgery
- Prevention of ischemic complications of unstable angina and non---Q-wave MI
- Treatment of deep vein thrombosis (DVT), pulmonary embolus with warfarin

Contraindications/cautions

- Contraindications: hypersensitivity to enoxaparin, heparin, pork products; severe thrombocytopenia; uncontrolled bleeding.
- Use cautiously with pregnancy or lactation, history of GI bleeding.

Dose

Prophylaxis of deep-vein thrombosis in medical patients, by subcutaneous injection, 40 mg (4000 units) every 24 hours for at least 6 days until patient ambulant (max. 14 days)

Treatment of deep-vein thrombosis or pulmonary embolism, by subcutaneous injection, 1.5 mg/kg (150 units/kg) every 24 hours, usually for at least 5 days (and until adequate oral anticoagulation established)

Unstable angina and non-ST-segment-elevation myocardial infarction, by subcutaneous injection, 1 mg/kg (100 units/kg) every 12 hours usually for 2–8 days (minimum 2 days)

Adverse effects

- Hematologic: Hemorrhage; *bruising*; thrombocytopenia; elevated AST, ALT levels; hyperkalemia

- Hypersensitivity: Chills, fever, urticaria, asthma
- Other: Fever; pain; local irritation, hematoma, erythema at site of injection

Clinically important interactions

- Drug-drug
    - ❖ Increased bleeding tendencies with oral anticoagulants, salicylates, penicillins, cephalosporins
- Drug-lab test
    - ❖ Increased AST, ALT levels
- Drug-alternative therapy
    - ❖ Increased risk of bleeding if combined with chamomile, garlic, ginger, gingko, and ginseng therapy

Nursing Considerations

- Give drug as soon as possible after hip surgery.
- Give deep SC injections; *do not* give enoxaparin by IM injection.
- Administer by deep SC injection; patient should be lying down. Alternate between the left and right anterolateral and posterolateral abdominal wall. Introduce the whole length of the needle into a skin fold held between the thumb and forefinger; hold the skin fold throughout the injection.
- Apply pressure to all injection sites after needle is withdrawn; inspect injection sites for signs of hematoma; do not massage injection sites.
- Do not mix with other injections or infusions.
- Store at room temperature; fluid should be clear, colorless to pale yellow.
- Provide for safety measures (electric razor, soft toothbrush) to prevent injury to patient who is at risk for bleeding.
- Check patient for signs of bleeding; monitor blood tests.
- Alert all health care providers that patient is on enoxaparin.
- Discontinue and initiate appropriate therapy if thromboembolic episode occurs despite enoxaparin therapy.
- Have protamine sulfate (enoxaparin antidote) on standby in case of overdose.

- Treat overdose as follows: Protamine sulfate (1% solution). Each mg of protamine neutralizes 1 mg enoxaparin. Give very slowly IV over 10 min.

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40. Ephedrine sulfate

Trade name: Nasal decongestant: Pretz-D

Drug classes

- Sympathomimetic drug
- Vasopressor
- Bronchodilator drug
- Nasal decongestant

Pregnancy: (Category C)

Therapeutic actions

Peripheral effects are mediated by receptors in target organs and are due in part to the release of norepinephrine from nerve terminals. Effects mediated by these receptors include vasoconstriction (increased BP, decreased nasal congestion α receptors); cardiac stimulation (β_1), and bronchodilation (β_2). Longer acting but less potent than epinephrine; also has CNS stimulant properties.

Indications

- Treatment of hypotensive states, especially those associated with spinal anesthesia; Stokes-Adams syndrome with complete heart block; CNS stimulant in narcolepsy and depressive states; acute bronchospasm (parenteral)
- Pressor agent in hypotensive states following sympathectomy, over dosage with ganglionic-blocking agents, antiadrenergic agents, or other drugs used for lowering BP (parenteral)
- Relief of acute bronchospasm (parenteral; epinephrine is the preferred drug)
- Treatment of allergic disorders, such as bronchial asthma, and local treatment of nasal congestion in acute coryza, vasomotor rhinitis, acute sinusitis, hay fever (oral)
- Symptomatic relief of nasal and nasopharyngeal mucosal congestion due to the common cold, hay fever, or other respiratory allergies (topical)
- Adjunctive therapy of middle ear infections by decreasing congestion around the eustachian ostia (topical)

Contraindications/cautions

- Contraindications: allergy to ephedrine, angle-closure glaucoma, anesthesia with cyclopropane or halothane, thyrotoxicosis, diabetes, hypertension, CV disorders, women in labor whose BP < 130/80.
- Use cautiously with angina, arrhythmias, prostatic hypertrophy, unstable vasomotor syndrome, lactation.

Dosage

Adult

Hypotensive episodes, allergic disorders, asthma:

25---50 mg IM (fast absorption), SC (slower absorption), or IV (emergency administration).

Labor:

Titrate parenteral doses to maintain BP at or below 130/80.

Acute asthma:

Administer the smallest effective dose (0.25---0.5 mL or 12.5---25 mg).

Maintenance dosage--allergic disorders, asthma:

25---50 mg PO q3---4h as necessary.

Topical nasal decongestant:

Instill solution in each nostril q4h. Do not use longer than 3---4 consecutive days.

Pediatric:

25---100 mg/m^2 IM or SC divided into 4 to 6 doses; 3 mg/kg per day or 100 mg/m^2 per day divided into 4 to 6 doses, PO, SC, or IV for bronchodilation.

Topical nasal decongestant (> 6 y):

Instill solution in each nostril q4h. Do not use for longer than 3---4 consecutive d. Do not use in children <6 y unless directed by physician.

Geriatric:

More likely to experience adverse reactions; use with caution.

Adverse effects

Systemic effects are less likely with topical administration, but can take place, and should be considered.

- CNS: *Fear, anxiety, tenseness, restlessness, headache, light-headedness, dizziness,* drowsiness, tremor, insomnia, hallucinations, psychological disturbances, convulsions, CNS depression, weakness, blurred vision, ocular irritation, tearing, photophobia, symptoms of paranoid schizophrenia
- GI: *Nausea*, vomiting, anorexia
- CV: Arrhythmias, hypertension resulting in intracranial hemorrhage, CV collapse with hypotension, palpitations, tachycardia, precordial pain in patients with ischemic heart disease
- GU: Constriction of renal blood vessels and *decreased urine formation* (initial parenteral administration), *dysuria, vesical sphincter spasm* resulting in difficult and painful urination, urinary retention in males with prostatism
- Local: *Rebound congestion* with topical nasal application
- Other: *Pallor*, respiratory difficulty, orofacial dystonia, sweating

Clinically important interactions

- Drug-drug
  - Severe hypertension with MAO-inhibitors, TCAs, furazolidone
  - Additive effects and increased risk of toxicity with urinary alkalinizers
  - Decreased vasopressor response with reserpine, methyldopa, urinary acidifiers
  - Decreased hypotensive action of guanethidine with ephedrine

Nursing Considerations

- Protect solution from light; give only if clear; discard any unused portion.
- Monitor urine output with parenteral administration; initially renal blood vessels may be constricted and urine formation decreased.
- Do not use nasal decongestant for longer than 3---5 d.
- Avoid prolonged use of systemic ephedrine (a syndrome resembling an anxiety effect may occur); temporary cessation of the drug usually reverses this syndrome.
- Monitor CV effects carefully; patients with hypertension may experience changes in BP because of the additional vasoconstriction. If a nasal decongestant is needed, give pseudoephedrine.

41. Erythromycin :

Trade names: Eramycin, Erythrocin

Drug class: Macrolide antibiotic
Pregnancy: (Category B)

Therapeutic actions

- Inhibits protein synthesis of microorganisms by binding to ribosome.
- It is effective only against rapidly multiplying organisms.
- Absorbed readily from the upper GIT (small intestine).
- Are manufactured in enteric –coated or film-coated forms to prevent destruction by gastric acid, diffuse poorly to C.S.F. & primarily excreted in bile.

Indications

Systemic Administration

- Acute infections caused by sensitive strains of *Streptococcus pneumoniae*, *Mycoplasma pneumoniae, Listeria monocytogenes*, *Legionella pneumophila*
- URIs, LRIs, skin and soft-tissue infections caused by group A β-hemolytic streptococci when oral treatment is preferred to injectable benzathine penicillin
- PID caused by *N. gonorrhoeae* in patients allergic to penicillin
- In conjunction with sulfonamides in URIs caused by *Haemophilus influenzae*
- As an adjunct to antitoxin in infections caused by *Corynebacterium diphtheriae* and *Corynebacterium minutissimum*
- Prophylaxis against α-hemolytic streptococcal endocarditis before dental or other procedures in patients allergic to penicillin who have valvular heart disease

Oral Erythromycin

- Treatment of intestinal amebiasis caused by *Entamoeba histolytica*; infections in the newborn and in pregnancy that are caused by *Chlamydia trachomatis* and in adult chlamydial infections when tetracycline cannot be used; primary syphilis (*Treponema pallidum*) in penicillin-allergic patients; eliminating *Bordetella pertussis* organisms from the nasopharynx of infected individuals and as prophylaxis in exposed and susceptible individuals.
- Unlabeled uses: erythromycin base is used with neomycin before colorectal surgery to reduce wound infection; treatment of severe diarrhea associated with *Campylobacter*

enteritis or enterocolitis; treatment of genital, inguinal, or anorectal lymphogranuloma venereum infection; treatment of *Haemophilus ducreyi* (chancroid)

Ophthalmic Ointment

- Treatment of superficial ocular infections caused by susceptible strains of microorganisms; prophylaxis of ophthalmia neonatorum caused by *N. gonorrhoeae* or *C. trachomatis*

Topical Dermatologic Solutions for Acne

- Treatment of acne vulgaris

Topical Dermatologic Ointment

- Prophylaxis against infection in minor skin abrasions
- Treatment of skin infections caused by sensitive microorganisms

Contraindications/cautions

Systemic Administration

- Contraindication: allergy to erythromycin.
- Use cautiously with hepatic dysfunction, lactation (secreted and may be concentrated in breast milk; may modify bowel flora of nursing infant and interfere with fever workups).

Ophthalmic Ointment

- Contraindications: allergy to erythromycin; viral, fungal, mycobacterial infections of the eye.

Dosage

Available Forms: Base: Tablets--250, 333, 500 mg; DR capsules--250 mg; ophthalmic ointment--5 mg/g. Estolate: Tablets--500 mg; capsules--250 mg; suspension--125, 250 mg/5 mL. Stearate: Tablets--200, 400 mg; suspension--200, 400 mg/5 mL, 100 mg/2---5 mL; powder for suspension--200 mg/5 mL; granules for suspension--400 mg/5 mL; topical solution--1.5%, 2%; topical gel, ointment--2%.

Systemic administration:

Oral preparations of the different erythromycin salts differ in pharmacokinetics: 400 mg erythromycin ethylsuccinate produces the same free erythromycin serum levels as 250 mg of erythromycin base, sterate, or estolate.

Adult:

15---20 mg/kg per day in continuous IV infusion or up to 4 g/d in divided doses q6h; 250 mg (400 mg of ethylsuccinate) q6h PO or 500 mg q12h PO or 333 mg q8h PO, up to 4 g/d, depending on the severity of the infection.

Streptococcal infections:

20---50 mg/kg per day PO in divided doses (for group A β-hemolytic streptococcal infections, continue therapy for at least 10 d).

Legionnaire's disease:

1---4 g/d PO or IV in divided doses (ethylsuccinate 1.6 g/d; optimal doses not established).

Dysenteric amebiasis:

250 mg (400 mg of ethylsuccinate) PO qid or 333 mg q8h for 10---14 d.

Acute pelvic inflammatory disease (N. gonorrhoeae):

500 mg of lactobionate or gluceptate IV q6h for 3 d and then 250 mg stearate or base PO q6h or 333 mg q8h for 7 d.

Pertussis:

40---50 mg/kg per day PO in divided doses for 5---14 d (optimal dosage not established).

Prophylaxis against bacterial endocarditis before dental or upper respiratory procedures: 1 g (1.6 g of ethylsuccinate) 6 h later.

Chlamydial infections:

Urogenital infections during pregnancy: 500 mg PO qid or 666 mg q8h for at least 7 d, 1/2 this dose q8h for at least 14 d if intolerant to first regimen. Urethritis in males: 800 mg of ethylsuccinate PO tid for 7 d.

Primary syphilis:

30---40 g (48---64 g of ethylsuccinate) in divided doses over 10---15 d.

CDC recommendations for STDs:

500 mg PO qid for 7---30 d, depending on the infection.

Pediatric:

30---50 mg/kg per day PO in divided doses. Specific dosage determined by severity of infection, age and weight.

Dysenteric amebiasis:

30---50 mg/kg per day in divided doses for 10---14 d.

Prophylaxis against bacterial endocarditis:

20 mg/kg before procedure and then 10 mg/kg 6 h later.

Chlamydial infections:

50 mg/kg per day PO in divided doses, for at least 2 (conjunctivitis of newborn) or 3 (pneumonia of infancy) wk.

Ophthalmic ointment:

1/2-in ribbon instilled into conjunctival sac of affected eye two to six times per day, depending on severity of infection.

Topical dermatologic solution for acne:

Apply to affected areas morning and evening.

Topical dermatologic ointment:

Apply to affected area 1---5 ×/d.

Adverse effects

Systemic Administration

- CNS: Reversible hearing loss, confusion, uncontrollable emotions, abnormal thinking
- GI: Abdominal cramping, anorexia, diarrhea, vomiting, pseudomembranous colitis, hepatotoxicity
- Hypersensitivity: Allergic reactions ranging from rash to anaphylaxis
- Other: Super infections

Ophthalmic Ointment

- Dermatologic: Edema, utricaria, dermatitis, angioneurotic edema
- Local: Irritation, burning, itching at site of application

Topical Dermatologic Preparations

- Local: Super infections, particularly with long-term use

Clinically important interactions

Systemic Administration

- Drug-drug
    - Increased serum levels of digoxin
    - Increased effects of oral anticoagulants, theophyllines, carbamazepine
    - Increased therapeutic and toxic effects of corticosteroids
    - Increased levels of cyclosporine and risk of renal toxicity

Topical Dermatologic Solution for Acne

- Drug-drug
    - Increased irritant effects with peeling, desquamating, or abrasive agents

Systemic Administration

- Drug-lab test
    - Interferes with fluorometric determination of urinary catecholamines
    - Decreased urinary estriol levels due to inhibition of hydrolysis of steroids in the gut

Nursing Consideration:

Systemic Administration

- Culture site of infection before therapy.

- Administer oral erythromycin base or stearate on an empty stomach, 1 h before or 2---3 h after meals, with a full glass of water (oral erythromycin estolate, ethylsuccinate, and certain enteric-coated tablets [see manufacturer's instructions] may be given without regard to meals).
- Administer around the clock to maximize effect; adjust schedule to minimize sleep disruption.
- Monitor liver function in patients on prolonged therapy.
- Give some preparations (see above) with meals, or substitute one of these preparations, if GI upset occurs with oral therapy.

Topical Dermatologic Solution for Acne

- Wash affected area, rinse well, and dry before application.

Ophthalmic and Topical Dermatologic Preparation

- Use topical products only when needed. Sensitization produced by the topical use of an antibiotic may preclude its later systemic use in serious infections. Topical antibiotic preparations not normally used systemically are best.
- Culture site before beginning therapy.
- Cover the affected area with a sterile bandage if needed (topical).

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42. Esomeprazole:

Trade names: Nexium

Class: Proton pump inhibitors, antinuclear agents

Pregnancy: (Category B)

Action:

- Binds to an enzyme on gastric parietal cells in the presence of acidic gastric pH, preventing the final transport of hydrogen ions into the gastric lumen.
- **Therapeutic Effects:**
  - Diminished accumulation of acid in the gastric lumen with lessened gastroesophageal reflux
  - Healing of duodenal ulcers.

Uses:

- Treatment of GERD including:
  - Healing of erosive esophagitis
  - Maintenance of healing of erosive esophagitis
  - Treatment of symptomatic GERD
- In combination with amoxicillin and clarithromycin for the eradication of Helicobacter pylori in patients with duodenal ulcer disease or a history of duodenal ulcer disease. (Information on cucurrent use with amoxicillin and clarithromycin can be found in Davis's Drug Guide for Nurses.

Dose:

Gastro-oesophageal reflux disease, 40 mg once daily for 4 weeks, followed by a further 4 weeks if not fully healed or symptoms persist; maintenance 20 mg daily; symptomatic treatment in the absence of oesophagitis, 20 mg daily for up to 4 weeks, followed by 20 mg daily when required

CHILD : not recommended

Contraindications:

- Hypersensitivity
- Lactation (not recommended).

Side effects:

CNS: headache.

GI: abdominal pain, constipation, diarrhea, dry mouth, flatulence, nausea.

Nursing considerations:

- NEXIUM should be taken at least one hour before meals.
- For patients who have a nasogastric or gastric tube in place, NEXIUM For Delayed-Release Oral Suspension can be administered as follows:
  - ✓ Add 15 mL of water to a catheter tipped syringe and then add the contents of a 10 mg, 20 mg or 40 mg NEXIUM packet. It is important to only use a catheter tipped syringe when administering NEXIUM through a nasogastric tube or gastric tube.
  - ✓ Immediately shake the syringe and leave 2 to 3 minutes to thicken.
  - ✓ Shake the syringe and inject through the nasogastric or gastric tube, French size 6 or larger, into the stomach within 30 minutes.
  - ✓ Refill the syringe with 15 mL of water.

- ✓ Shake and flush any remaining contents from the nasogastric or gastric tube into the stomach.

- NEXIUM For Delayed-Release Oral Suspension should be administered as follows :
  - Empty the contents of a 10 mg, 20 mg or 40 mg packet into a container containing 1 tablespoon (15 mL) of water .
  - Stir.
  - Leave 2 to 3 minutes to thicken .
  - Stir and drink within 30 minutes .
  - If any material remains after drinking, add more water, stir, and drink immediately.

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43. Fentanyl:

Trade names: Actiq, Duragesic, Fentanyl Oralet, Fentanyl Transdermal, Fentanyl Transmucosal, Sublimaze

Drug class

- Narcotic agonist analgesic

Pregnancy: (Category C/ D if used for prolonged periods or in high doses at term)

Therapeutic actions

- Acts at specific opioid receptors, causing analgesia, respiratory depression, physical depression, euphoria.

Indications

- Analgesic action of short duration during anesthesia and immediate postop period
- Analgesic supplement in general or regional anesthesia
- Administration with a neuroleptic as an anesthetic premeditation, for induction of anesthesia, and as an adjunct in maintenance of general and regional anesthesia
- For use as an anesthetic agent with oxygen in selected high-risk patients
- Transdermal system: management of chronic pain in patients requiring opioid analgesia
- Treatment of breakthrough pain in cancer patients being treated with narcotics

Contraindications/cautions

- Contraindications: hypersensitivity to narcotics, diarrhea caused by poisoning, acute bronchial asthma, upper airway obstruction, pregnancy.

- Use cautiously with bradycardia, history of seizures, lactation.

Dose

by intravenous injection, with spontaneous respiration, 50–200 micrograms, then 50 micrograms as required; CHILD 3–5 micrograms/kg, then 1 microgram/kg as required

With assisted ventilation, 0.3–3.5 mg, then 100–200 micrograms as required;

Child: 15 micrograms/kg, then 1–3 micrograms/kg as required

By intravenous infusion In ICU: 0.5 – 1 micrograms/kg/ *hour*

Adverse effects

- CNS: Sedation, clamminess, sweating, headache, vertigo, floating feeling, dizziness, lethargy, confusion, light-headedness, nervousness, unusual dreams, agitation, euphoria, hallucinations, delirium, insomnia, anxiety, fear, disorientation, impaired mental and physical performance, coma, mood changes, weakness, headache, tremor, convulsions
- GI: Nausea, vomiting, dry mouth, anorexia, constipation, biliary tract spasm
- CV: Palpitation, increase or decrease in BP, circulatory depression, cardiac arrest, shock, tachycardia, bradycardia, arrhythmia, palpitations
- Respiratory: Slow, shallow respiration, apnea, suppression of cough reflex, laryngospasm, bronchospasm
- GU: Ureteral spasm, spasm of vesical sphincters, urinary retention or hesitancy, oliguria, antidiuretic effect, reduced libido or potency
- EENT: Diplopia, blurred vision
- Dermatologic: Rash, hives, pruritus, flushing, warmth, sensitivity to cold
- Local: Phlebitis following IV injection, pain at injection site; tissue irritation and induration (SC injection)
- Other: Physical tolerance and dependence, psychological dependence; local skin irritation with transdermal system

Clinically important interactions

- Drug-drug
  - Potentiation of effects when given with barbiturate anesthetics; decrease dose of fentanyl when coadministering
- Drug-lab test

- Elevated biliary tract pressure may cause increases in plasma amylase, lipase; determinations of these levels may be unreliable for 24 h after administration of narcotics

Nursing Considerations

- ❖ Administer to women who are nursing a baby 4---6 h before the next scheduled feeding to minimize the amount in milk.
- ❖ Provide narcotic antagonist, facilities for assisted or controlled respiration on standby during parenteral administration.
- ❖ Prepare site by clipping (not shaving) hair at site; do not use soap, oils, lotions, alcohol; allow skin to dry completely before application. Apply immediately after removal from the sealed package; firmly press the transdermal system in place with the palm of the hand for 10---20 sec, making sure the contact is complete. Must be worn continually for 72 h.
- ❖ Use caution with Actiq form to keep this drug out of the reach of children (looks like a lollipop) and follow the distribution restrictions in place with this drug very carefully.

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44. Flumazenil " Anexate" :

Trade names: Anexate

Drug class: Benzodiazepine antagonist; reverses sedative effects of benzodiazepines used in conscious sedation and general anesthesia; treatment of benzodiazepine overdose

Pregnancy: (Category C)

Therapeutic actions

Competitively inhibits the activity at the benzodiazepine recognition site on the GABA/benzodiazepine receptor complex. Flumazenil does not antagonize the CNS effect of drugs affecting GABA-ergic neurons by means other than the benzodiazepine receptor (ethanol, barbiturates, general anesthetics) and does not reverse the effects of opioids

Dose:

- By intravenous injection, 0.8–2 mg repeated at intervals of 2–3 minutes to a max. of 10 mg if respiratory function does not improve (then question

diagnosis); CHILD 10 micrograms/kg; subsequent dose of 100 micrograms/kg if no response

- By subcutaneous or intramuscular injection, as intravenous injection but only if intravenous route not feasible (onset of action slower)
- By continuous intravenous infusion using an infusion pump, 10 mg diluted in 50 mL intravenous infusion solution at a rate adjusted according to the response

Adverse Reactions

- >10%
- Gastrointestinal: Vomiting, nausea
- 1% to 10%:
- Cardiovascular: Palpitations
- Central nervous system: Headache, anxiety, nervousness, insomnia, abnormal crying, euphoria, depression, agitation, dizziness, emotional lability, ataxia, depersonalization, tears increased, dysphoria, paranoia, fatigue, vertigo
- Endocrine & metabolic: Hot flashes
- Gastrointestinal: Xerostomia
- Local: Pain at injection site
- Neuromuscular & skeletal: Tremor, weakness, paresthesia
- Ocular: Abnormal vision, blurred vision
- Respiratory: Dyspnea, hyperventilation
- Miscellaneous: Diaphoresis
- <1%: Abnormal hearing, altered blood pressure (increases and decreases), confusion, sensation of coldness, bradycardia, chest pain, generalized convulsions, hiccups, hypertension, junctional tachycardia, shivering, somnolence, tachycardia, thick tongue, ventricular tachycardia, withdrawal syndrome
- Postmarketing and/or case reports: Fear, panic attacks

Overdosage/Toxicology

Excessively high doses may cause anxiety, agitation, increased muscle tone, hyperesthesia and seizures.

Nursing Implications

- Parenteral: For I.V. use only;
- administer via freely running I.V. infusion into larger vein to decrease chance of pain, phlebitis

Patient Education

- Flumazenil does not consistently reverse amnesia. Do not engage in activities requiring alertness for 18-24 hours after discharge.
- Avoid alcohol or OTC medications for 24 hours after receiving this medication, unless approved by prescriber.
- Resedation may occur in patients on long-acting benzodiazepines (such as diazepam).
- Pregnancy/breast-feeding precautions: Should Inform physician if you she is or intend to become pregnant and Consult him if she is a breast-feeding.

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45. Furosemiade " Lasix " :

Trade names: Apo-Furosemide, Lasix

Drug class: Loop diuretics

Pregnancy: (Category C/ D if used in pregnancy-induced hypertension.]

Therapeutic actions

- Inhibits the reabsorption of sodium and chloride from the proximal and distal renal tubules and the loop of Henle, leading to a sodium-rich diuresis.

Indications

- Edema associated with CHF, cirrhosis, renal disease (oral, IV)
- Acute pulmonary edema (IV)
- Hypertension (oral)

Contraindications/cautions

- Contraindications: allergy to furosemide, sulfonamides; allergy to tartrazine (in oral solution); electrolyte depletion; anuria, severe renal failure; hepatic coma; pregnancy; lactation.

- Use cautiously with SLE, gout, diabetes mellitus.

Dose

- by mouth, oedema, initially 40 mg in the morning; maintenance 20–40 mg daily, increased in resistant oedema to 80 mg daily or more;
- CHILD 1–3 mg/kg daily, max. 40 mg daily
  Oliguria, initially 250 mg daily; if necessary larger doses, increasing in steps of 250 mg, may be given every 4–6 hours to a max. Of a single dose of 2 g (rarely used)
- By intramuscular injection or slow intravenous injection, initially 20–50 mg; CHILD 0.5–1.5 mg/kg to a max. daily dose of 20 mg
- By intravenous infusion (by syringe pump if necessary), in oliguria, initially 250 mg over 1 hour (rate not exceeding 4 mg/minute), if satisfactory urine output not obtained in the subsequent hour further 500 mg over 2 hours, then if no satisfactory response within subsequent hour, further 1 g over 4 hours, if no response obtained dialysis probably required; effective dose (up to 1 g) can be repeated every 24 hours

Adverse effects

- CNS: *Dizziness, vertigo, paresthesias, xanthopsia, weakness*, headache, drowsiness, fatigue, blurred vision, tinnitus, irreversible hearing loss
- GI: *Nausea, anorexia, vomiting, oral and gastric irritation, constipation*, diarrhea, acute pancreatitis, jaundice
- CV: *Orthostatic hypotension*, volume depletion, cardiac arrhythmias, *thrombophlebitis*
- Hematologic: *Leukopenia, anemia, thrombocytopenia*, fluid and electrolyte imbalances
- GU: Polyuria, nocturia, *glycosuria, urinary bladder spasm*
- Dermatologic: *Photosensitivity, rash, pruritus, urticaria*, purpura, exfoliative dermatitis, erythema multiforme
- Other: *Muscle cramps and muscle spasms*

Clinically important interactions

- Drug-drug
  - Increased risk of cardiac arrhythmias with digitalis glycosides (due to electrolyte imbalance)
  - Increased risk of ototoxicity with aminoglycoside antibiotics, cisplatin

- Decreased absorption of furosemide with phenytoin
- Decreased natriuretic and antihypertensive effects with indomethacin, ibuprofen, other NSAIDs
- Decreased GI absorption with charcoal

Nursing Considerations

- Administer with food or milk to prevent GI upset.
- Reduce dosage if given with other antihypertensive; readjust dosages gradually as BP responds.
- Give early in the day so that increased urination will not disturb sleep.
- Avoid IV use if oral use is at all possible.
- Do not mix parenteral solution with highly acidic solutions with pH below 3.5.
- Do not expose to light, may discolor tablets or solution; do not use discolored drug or solutions.
- Discard diluted solution after 24 h.
- Refrigerate oral solution.
- Measure and record weight to monitor fluid changes.
- Arrange to monitor serum electrolytes, hydration, and liver function.
- Arrange for potassium-rich diet or supplemental potassium as needed.

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46. Gentamycin :

Trade name: Garamyein.

Class: - antibiotic, aminoglycoside.

Pregnancy: (Category C)

Indication:

- It is the drug of choice for hospital- acquired gram negative sepsis including neonatal sepsis.
- Serious staphylococcal infections.

Side effects

- ↑blood pressure, alopecia
- CNS: ototoxicity, tinnitus, dizziness, ringing in the ears, vertigo.
- GI: nausea, vomiting, anorexia, weight loss, increased salivation.
- C.V.: palpitation, hypotension or hypertension.
- Hematologic: Decrease number of blood cells.

- GU: nephrotoxicity
- Local: Pain and irritation at IM injection site.

Formulation:-

Vial 2 ml containing 20 mg.

Ampoule 2 ml containing 80 mg.

Dosage:-

- I.M. (usual). I.V. adults 3 mg\kg q 8 hr up to 5 mg\kg daily.

Children 2-2.5 mg\kg q 8 hr.

Newborns 2.5 mg\ kg q 12 hr.

Ophthalmic solution 0.3%, 1-2 drops q 15-30 minutes.

Topical ointment 0.1%, 1-5 times daily to the affected area.

Streptococcal or enterococcal endocarditis in combination with other drugs, 80 mg twice daily.

N.B.:-

Should not be mixed with other drugs for parenteral use.

Nursing implication:

- When given IM, give it slowly and deep in the muscle.
- Dilute dose when given IV.
- Monitor for kidney function tests, complete blood count when used for more than 7 days. Consult with Dr. accordingly.

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47. Glibenclamide ' Daonil ' :

Trade name: daonil.

Pregnancy: (Category C)

Class: First generation sulfonylurea.

Indication:

Non- insulin dependent diabetes mellitus (NIDDM) (type II).

- Patients should be subjected to a 7 day therapeutic trial.
- Decrease in blood sugar, decrease in glucosuria & disappearance of Polyuria, polydipsia, & polyphagia indicate that patient can be managed on oral antidiabetic agents.

Contraindications:

- Type I of D.M.
- Renal & liver disease.
- Diabetes complicated by recurrent episodes of ketoacidosis.

Dose:

Initially ½ -1 tablet (5mg) daily, increased by 2.5 – 5 mg weekly to achieve the desired response. max. 15 mg daily.

Side effects:

- Hypoglycemia (most common).
- Nausea, heartburn, diarrhea
- Headache, dizziness, general weakness.
- Pancytopnea.
- Chronic use increases risk of cardiovascular mortality.
- Cholestatic jaundice (rare).

Nursing considerations:

- Drugs may be taken with food to minimize GI upset.
- Stop the medication if signs of side-effects or ketoacidosis appear
- Explain the importance of carrying candy or sugar at all times to counteract hypoglycemia should it occur.
- Provide the client & family with a printed chart explaining symptoms of hypoglycemia, hyperglycemia & instructions concerning what to do for each.
- Explain the importance of exercise & adhering to the prescribed diet.

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48. Glucagon :

Trade name: Glucagon

Class: First generation sulfonylurea

Pregnancy: (Category B)

Action: mobilising glycogen stored in the liver

Uses: Glucagon is a hormone that causes the liver to release glucose into the blood. It is used to quickly increase blood sugar levels in diabetics with low blood sugar (hypoglycemia). This medication may also be used during certain medical tests.

Dose

- by subcutaneous, intramuscular, or intravenous injection, Adult and Child over 8 years (or body-weight over 25 kg), 1 mg;
- Child under 8 years (or body-weight under 25 kg), 500 micrograms; if no response within 10 minutes intravenous glucose must be given

Side Effects:

- Nausea and vomiting may occur but are also signs of low blood sugar.

- Allergy symptoms such as skin rash and breathing trouble have been reported with this medication.

Nursing considerations:

- Be aware of symptoms of hypoglycemia - stomach pain, anxious feeling, chills, cold sweats, confusion, cool skin, difficulty in concentrating, drowsiness, hunger, rapid heart rate, headache, nausea, vomiting, shakiness, unsteadiness, vision changes or weakness. Pt should instructed to eat or drink a source of sugar if he experiences these symptoms.
- After injection of Glucagon, the patient must be turned on their side to avoid choking.
- Glucagon is only effective for 90 minutes and is to be used only until the patient is able to swallow.
- The blood sugar should be checked hourly for 3 to 4 hours after regaining consciousness.

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49. Haloperidol decanoate :

Trade name: Apo-Haloperidol, Haldol, Haldol Decanoate, Haldol, Novo-Peridol, Peridol, PMS-Haloperidol.

Drug classes

- Dopaminergic blocking drug
- Antipsychotic drug
- Butyrophenone (not a phenothiazine)

Pregnancy: (Category C)

Action:

Mechanism not fully understood: antipsychotic drugs block postsynaptic dopamine receptors in the brain, depress the RAS, including those parts of the brain involved with wakefulness and emesis; chemically resembles the phenothiazines.

Indications

- Management of manifestations of psychotic disorders
- Control of tics and vocalizations in Gilles de la Tourette's syndrome in adults and children
- Short-term treatment of hyperactive children who also show impulsivity, difficulty sustaining attention, aggressivity, mood lability, or poor frustration tolerance
- Prolonged parenteral therapy of chronic schizophrenia (haloperidol decanoate)

- Unlabeled uses: control of nausea and vomiting, control of acute psychiatric situations (IV use)

Contraindications/cautions

- Contraindications: coma or severe CNS depression, bone marrow depression, blood dyscrasia, circulatory collapse, subcortical brain damage, Parkinson's disease, liver damage, cerebral arteriosclerosis, coronary disease, severe hypotension or hypertension.
- Use cautiously with respiratory disorders ("silent pneumonia"); glaucoma, prostatic hypertrophy (anticholinergic effects may exacerbate glaucoma and urinary retention); epilepsy or history of epilepsy (drug lowers seizure threshold); breast cancer (elevations in prolactin may stimulate a prolactin-dependent tumor); thyrotoxicosis; peptic ulcer, decreased renal function; myelography within previous 24 h or scheduled within 48 h; exposure to heat or phosphorous insecticides; lactation; children younger than 12 y, especially those with chickenpox, CNS infections (children are especially susceptible to dystonias that may confound the diagnosis of Reye's syndrome); allergy to aspirin if giving the 1-, 2-, 5-, and 10-mg tablets (these tablets contain tartrazine).

Dose:

- by mouth,, short-term adjunctive management of psychomotor agitation, excitement, and violent or dangerously impulsive behavior, initially 1.5–3 mg 2–3 times daily or 3–5 mg 2–3 times daily in severely affected or resistant patients; adjusted according to response to lowest effective maintenance dose (as low as 5–10 mg daily); Elderly (or debilitated) initially half adult dose; Child initially 25–50 micrograms/kg daily (in 2 divided doses) to max. 10 mg
- Agitation and restlessness in the elderly, initially 0.5–1.5 mg once or twice daily
- Short-term adjunctive management of severe anxiety, 500 micrograms twice daily; CHILD not recommended
- Intractable hiccup, 1.5 mg 3 times daily adjusted according to response; CHILD not recommended
- Nausea and vomiting, 1 mg daily
- By intramuscular or by intravenous injection, initially 2–10 mg, then every 4–8 hours according to response to total max. 18 mg daily; severely disturbed patients may require initial dose of up to 18 mg; elderly (or debilitated) initially half adult dose; CHILD not recommended

  Nausea and vomiting, 0.5–2 mg

Adverse effects

Not all effects have been reported with haloperidol; however, because haloperidol has certain pharmacologic similarities to the phenothiazine class of antipsychotic drugs, all adverse effects associated with phenothiazine therapy should be kept in mind when haloperidol is used.

- CNS: Drowsiness, insomnia, vertigo, headache, weakness, tremor, ataxia, slurring, cerebral edema, seizures, exacerbation of psychotic symptoms, extrapyramidal syndromes--pseudoparkinsonism; dystonias; akathisia, tardive dyskinesias, potentially irreversible (no known treatment), neuroleptic malignant syndrome--extrapyramidal symptoms, hyperthermia, autonomic disturbances
- CV: Hypotension, orthostatic hypotension, hypertension, tachycardia, bradycardia, cardiac arrest, CHF, cardiomegaly, refractory arrhythmias (some fatal), pulmonary edema
- Respiratory: Bronchospasm, laryngospasm, Dyspnea; suppression of cough reflex and potential for aspiration
- Hematologic: Eosinophilia, leukopenia, leukocytosis, anemia; aplastic anemia; hemolytic anemia; thrombocytopenic or nonthrombocytopenic purpura; Pancytopnea
- Hypersensitivity: Jaundice, urticaria, angioneurotic edema, laryngeal edema, photosensitivity, eczema, asthma, anaphylactoid reactions, exfoliative dermatitis
- Endocrine: Lactation, breast engorgement in females, galactorrhea; SIADH; amenorrhea, menstrual irregularities; gynecomastia in males; changes in libido; hyperglycemia or hypoglycemia; glycosuria; hyponatremia; pituitary tumor with hyperprolactinemia; inhibition of ovulation, infertility, pseudopregnancy
- Autonomic: Dry mouth, salivation, nasal congestion, nausea, vomiting, anorexia, fever, pallor, flushed faces, sweating, constipation, paralytic ileus, urinary retention, incontinence, Polyuria, enuresis, priapism, ejaculation inhibition

Nursing Considerations

- Do not give children IM injections.
- Do not use haloperidol decanoate for IV injections.
- Gradually withdraw drug when patient has been on maintenance therapy to avoid withdrawal-emergent dyskinesias.
- Discontinue drug if serum creatinine, BUN become abnormal or if WBC count is depressed.
- Monitor elderly patients for dehydration; institute remedial measures promptly; sedation and decreased thirst related to CNS effects can lead to severe dehydration.

- Consult physician regarding appropriate warning of patient or patient's guardian about tardive dyskinesias.
- Consult physician about dosage reduction, use of anticholinergic antiparkinsonism drugs (controversial) if extrapyramidal effects occur.

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50. Heparin sodium injection:

Trade names:

Hepalean, Heparin Leo

Heparin sodium and 0.9% sodium chloride

Hepalean-Lok, Heparin Lock Flush, Hep-Lock

Drug class

- Anticoagulant

Class: anticoagulant

Pregnancy: (Category B)

Action:

- Anticoagulant
- Potentiate the inhibitory action of antithrombin III on various coagulation factors.
- Inactivate thrombin and prevent the conversion of fibrinogen to fibrin.

Uses:

- To prevent extension of clots.
- To prevent thrombi and emboli from recurring.
- Prophylactic from thromboembolic diseases.
- After some types of surgery (cardiac & vascular).
- Prevent clotting during hemodialysis.
- Treatment of DIC (disseminated intravascular coagulation) coronary occlusion after MI.

Contraindications:

- ✓ Blood disorders with bleeding tendencies (hemophilia).
- ✓ Suspected intracranial hemorrhage.
- ✓ Open wounds.
- ✓ During surgery of the eyes, brain and spinal cord.
- ✓ Menstruation.
- ✓ Abortion.

Side effects:

- Hemorrhage.

Overdose:

- Nose bleeds ,
- Hematuria,
- Petechiae , and
- Tarry stool.

Antidote:

- Protamin sulfate.

Dose:

- IV or S.C measured in units according to
  Bleeding & clotting time
- treatment of deep-vein thrombosis and pulmonary embolism, by intravenous injection, loading dose of 5000 units (10 000 units in severe pulmonary embolism) followed by continuous infusion of 15–25 units/kg/hour or treatment of deep-vein thrombosis, by subcutaneous injection of 15 000 units every 12 hours (laboratory monitoring essential—preferably on a daily basis, and dose adjusted accordingly)

  SMALL ADULT OR CHILD, lower loading dose then, 15–25 units/kg/hour by intravenous infusion, or 250 units/kg every 12 hours by subcutaneous injection

  Unstable angina, acute peripheral arterial occlusion, as intravenous regimen for deep-vein thrombosis and pulmonary embolism,

  Prophylaxis in general surgery by subcutaneous injection, 5000 units 2 hours before surgery, then every 8–12 hours for 7 days or until patient is ambulant (monitoring not needed); during pregnancy (with monitoring), 5000–10 000 units every 12 hours (important: not intended to cover prevention of prosthetic heart valve thrombosis in pregnancy which calls for separate specialist management)

- Myocardial Infarction: For the prevention of coronary re-occlusion after Thrombolysis heparin is used in a variety of regimens according to locally agreed protocols

  For the prevention of mural thrombosis heparin is considered effective when given by subcutaneous injection of 12 500 units every 12 hours for at least 10 days

Nursing considerations:

- Should not be administered IM, administer by deep sc to minimize local irritation and to prolong the action of drug.
- Don’t massage before and after injection.
- Change site of administration.
- Instruct and stress the importance of reporting any signs of active bleeding.
- Use electric razor for shaving, soft bristle tooth brush to decrease gum irritation.
- Patient should be hospitalized for IV therapy.
- Clotting time, PTT should be done before the start of therapy each dose of drug then daily.

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51. Human Albumin :

Trade names: Human albumin 20% Biotest low salt content

Class: Blood volume expander, plasma protein fraction,

Pregnancy: (Category C)

Action:

- Plasma substitute
- It contribute to oncotic pressure of the blood and transport function
- Albumin stabilizes circulating blood volume and is a carrier of hormones, enzymes, medicinal products

Uses:

- shock, post surgery,
- Nephrotic syndrome,
- burns,
- coma,
- liver cirrhosis,
- premature infants, and
- Hyper bilirubinemia.

Dose:

Hypoalbuminemia 1 g /kg /day IV infusion over 1-2 hours

Side effects:

Mild reactions such as flush, urticaria, fever and nausea

Nursing considerations:

- ❖ Do not use the solutions which are cloudy or have deposits

  This means that the protein is unstable or that the solution becomes contaminated.
- ❖ If large amount of solution used the bottle should be warmed to the room temperature or body temperature before use
- ❖ Monitor for side effects or any reactions.

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52. Hydrocortisone :

Trade names: hydrocortisone butyrate

Class:

- Corticosteroid, short acting
- Glucocorticoid
- Mineralocorticoid
- Adrenal cortical hormone (hydrocortisone)
- Hormonal agent

Pregnancy: (Category C/ D if used in 1st trimester)

Action: Enters target cells and binds to cytoplasmic receptors; initiates many complex reactions that are responsible for its anti-inflammatory, immunosuppressive (glucocorticoid), and salt-retaining (Mineralocorticoid) actions. Some actions may be undesirable, depending on drug use.

Indications

- Replacement therapy in adrenal cortical insufficiency
- Hypocalcaemia associated with cancer
- Short-term inflammatory and allergic disorders, such as rheumatoid arthritis, collagen diseases (SLE), dermatologic diseases (pemphigus), status asthmaticus, and autoimmune disorders
- Hematologic disorders--thrombocytopenic purpura, erythroblastopenia
- Trichinosis with neurologic or myocardial involvement
- Ulcerative colitis, acute exacerbations of multiple sclerosis, and palliation in some leukemia and lymphomas
- Intra-articular or soft-tissue administration: Arthritis, psoriatic plaques
- Retention enema: For ulcerative colitis, proctitis

- Dermatologic preparations: To relieve inflammatory and pruritic manifestations of dermatoses that are steroid responsive
- Anorectal cream, suppositories: To relieve discomfort of hemorrhoids and perianal itching or irritation

Contraindications/cautions

- Systemic administration: infections, especially tuberculosis, fungal infections, amebiasis, hepatitis B, vaccinia, or varicella, and antibiotic-resistant infections; kidney disease (risk to edema); liver disease, cirrhosis, hypothyroidism; ulcerative colitis with impending perforation; diverticulitis; recent GI surgery; active or latent peptic ulcer; inflammatory bowel disease (risks exacerbations or bowel perforation); hypertension, CHF; thromboembolitic tendencies, thrombophlebitis, osteoporosis, convulsive disorders, metastatic carcinoma, diabetes mellitus; lactation.
- Retention enemas, intrarectal foam: systemic fungal infections, recent intestinal surgery, extensive fistulas.
- Topical dermatologic administration: fungal, tubercular, herpes simplex skin infections; vaccinia, varicella; ear application when eardrum is perforated; lactation.

Dose:

- by mouth, replacement therapy, 20–30 mg daily in divided doses , CHILD 10–30 mg
- By intramuscular injection or slow intravenous injection or infusion, 100–500 mg, 3–4 times in 24 hours or as required; CHILD by slow intravenous injection up to 1 year 25 mg, 1–5 years 50 mg, 6–12 years 100 mg

Adverse effects

Systemic

- CNS: Vertigo, headache, paresthesias, insomnia, convulsions, psychosis
- GI: Peptic or esophageal ulcer, pancreatitis, abdominal distention, nausea, vomiting, increased appetite and weight gain (long-term therapy)

- CV: Hypotension, shock, hypertension and CHF secondary to fluid retention, thromboembolism, thrombophlebitis, fat embolism, cardiac arrhythmias secondary to electrolyte disturbances
- Hematologic: Na+ and fluid retention, hypokalemia, hypocalcaemia, increased blood sugar, increased serum cholesterol, decreased serum T3 and T4 levels
- Musculoskeletal: Muscle weakness, steroid myopathy and loss of muscle mass, osteoporosis, spontaneous fractures (long-term therapy)
- EENT: Cataracts, glaucoma (long-term therapy), increased intraocular pressure
- Dermatologic: Thin, fragile skin; Petechiae; ecchymoses; purpura; striae; subcutaneous fat atrophy
- Hypersensitivity: Anaphylactoid or hypersensitivity reactions
- Endocrine: Amenorrhea, irregular menses, growth retardation, decreased carbohydrate tolerance and diabetes mellitus, cushingoid state (long-term therapy), hypothalamic-pituitary-adrenal (HPA) suppression systemic with therapy longer than 5 d
- Other: Immunosuppression, aggravation or masking of infections, impaired wound healing

Adverse Effects Related to Specific Routes of Administration

- IM repository injections: Atrophy at injection site
- Retention enema: Local pain, burning; rectal bleeding; systemic absorption and adverse effects (above)
- Intra-articular: Osteonecrosis, tendon rupture, infection
- Intraspinal: Meningitis, adhesive arachnoiditis, conus medullaris syndrome
- Intralesional therapy, head and neck: Blindness (rare)
- Intrathecal administration: Arachnoiditis
- Topical dermatologic ointments, creams, sprays: Local burning, irritation, acneiform lesions, striae, skin atrophy

Nursing Considerations

Systemic Administration

- Give daily before 9 AM to mimic normal peak diurnal corticosteroid levels and minimize HPA suppression.
- Space multiple doses evenly throughout the day.
- Do not give IM injections if patient has thrombocytopenic purpura.
- Rotate sites of IM repository injections to avoid local atrophy.

- Use minimal doses for minimal duration to minimize adverse effects.
- Taper doses when discontinuing high-dose or long-term therapy.
- Arrange for increased dosage when patient is subject to unusual stress.
- Use alternate-day maintenance therapy with short-acting corticosteroids whenever possible.
- Do not give live virus vaccines with immunosuppressive doses of hydrocortisone.
- Provide antacids between meals to help avoid peptic ulcer.

Topical Dermatologic Administration

- Use caution with occlusive dressings; tight or plastic diapers over affected area can increase systemic absorption.
- Avoid prolonged use, especially near eyes, in genital and rectal areas, on face, and in skin creases.

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53. Hydralazine hydrochloride :

Trade names: Apresoline

Class:

- Antihypertensive, direct action on vascular
  Smooth muscles.

Pregnancy: (Category C)

Action:-

Directly affect smooth muscles → vasodilatation,
↑ Cardiac output and finally ↑ blood flow to the brain and kidneys.

Uses:-

- Used with combination therapy to treat hypertension.
- Given parenterally in hypertension emergencies.

Contraindications:-

- Angina pectoris.
- Rheumatic heart disease.
- Chronic glomerulonephritis.
- Systemic lupus erythrmatosus (S.L.E.)

Side effects:-

- Orthostatic hypotension, tachycardia, nausea, vomiting.
- Headache, dizziness, constipation and male impotence.

Dosage:-

- Tabs. : initially 10 mg qid for 2-4 days, then 25 mg bid
- I.V, I.M:-50 mg (IV slowly) repeated as necessary. (May decrease Bp in 5 minutes.)

Dose :

- By mouth, hypertension, 25 mg twice daily, increased to usual max. 50 mg twice daily
- Heart failure (initiated in hospital) 25 mg 3–4 times daily, increased every 2 days if necessary; usual maintenance dose 50–75 mg 4 times daily
- By slow intravenous injection, hypertension with renal complications and hypertensive crisis, 5–10 mg diluted with 10 mL sodium chloride 0.9%; may be repeated after 20–30 minutes
- By intravenous infusion, hypertension with renal complications and hypertensive crisis, initially 200–300 micrograms/minute; maintenance usually 50–150 micrograms/minute

Nursing considerations:-

- Avoid activities that need mental awareness such as driving.
- Advise pt. to rise from the bed slowly.
- Instruct pt. about reportable Signs & Symptoms
- Advise client to carry a card detailing current medication Regimens always.

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54. Hyoscine Butylpromide :

Trade names: ' Scobutyl ':

Class: Antimuscarinic

Pregnancy: (Category C)

Action: Antispasmodics

Hyoscine works by preventing certain chemicals produced by the body, from interacting with the muscarinic receptors located on the smooth muscle of the gut. This causes the gut muscle to relax, removing the pain of colic resulting from the gut muscle contraction and spasm.

Indications:

- Abdominal pain associated with menstrual periods

- Abdominal pain which comes and goes (colic)
- Irritable Bowel Syndrome

Contraindications:

- Abnormal muscle weakness
- Enlarged prostate
- Failure of function of part of the gut causing an obstruction (paralytic ileus)
- Glaucoma
- Life long inherited blood diseases which can cause a variety of symptoms, including mental health problems (porphyrias)
- Narrowing of the outlet of the stomach making it difficult for food to pass into the intestines (pyloric stenosis)

Dose:

- *by* mouth, 20 mg 4 times daily; CHILD 6–12 years, 10 mg 3 times daily, Irritable bowel syndrome, 10 mg 3 times daily, increased if required up to 20 mg 4 times daily
- By intramuscular or intravenous injection, acute spasm and spasm in diagnostic procedures, 20 mg repeated after 30 minutes if necessary (may be repeated more frequently in endoscopy); CHILD not recommended

Side effects:

- Tachycardia
- Urgency
- Blurred vision
- Dry mouth
- Constipation
- Urinary retention

Nursing considerations:-

- Have patient void before taking medication if urinary retention is a problem.
- Monitor for signs and symptoms of allergy to drug

****

55. Iprtropium Bromide:

Trade names: Atrovent

Action: Antimuscarinic bronchodilators

Drug classes

- Anticholinergic

- Antimuscarinic agent
- Parasympatholytic

Pregnancy: (Category B)

Therapeutic actions

- Anticholinergic, chemically related to atropine, which blocks vagally mediated reflexes by antagonizing the action of acetylcholine.

Indications

- Bronchodilator for maintenance treatment of bronchospasm associated with COPD (solution, aerosol)
- Symptomatic relief of rhinorrhea associated with perennial rhinitis, common cold (nasal spray)

Contraindications/cautions

- Contraindications: hypersensitivity to atropine or its derivatives, acute episodes of bronchospasm.
- Use cautiously with narrow-angle glaucoma, prostatic hypertrophy, bladder neck obstruction, pregnancy, lactation.

Dose:

- By inhalation of nebulised solution, 100–500 micrograms up to 4 times daily;
- CHILD 1 month–3 years 62.5–250 micrograms up to 3 times daily [unlicensed];
- 3–14 years 100–500 micrograms up to 3 times daily.

Adverse effects

- CNS: Nervousness, dizziness, headache, fatigue, insomnia, blurred vision
- GI: Nausea, GI distress, dry mouth
- Respiratory: Cough, exacerbation of symptoms, hoarseness
- Other: Palpitations, rash

Nursing Considerations

- Protect solution for inhalation from light. Store unused vials in foil pouch.

- Ensure adequate hydration; provide environmental control (temperature) to prevent hyperpyrexia.
- Have patient void before taking medication to avoid urinary retention.
- Teach patient proper use of inhalator.

****

56. Isoproterenol :

Trade names: Isuprel

Class: Sympathomimetic

Pregnancy: (Category C)

Action:

- Isoproterenol is a synthetic catecholamine that stimulates both beta1 and beta2 adrenergic receptors
- (No alpha receptor capabilities).
- Inotropic Sympathomimetic ’non selective beta agonist ’
- The drug affects the heart by increasing Inotropic and chronotropic activity.
- In addition, isoproterenol causes arterial and bronchial dilation, and is sometimes administered via aerosolization as a bronchodilator to treat bronchial asthma and bronchospasm.

Indications

- Hemodynamically significant bradycardia unresponsive to atropine, TCP, dopamine and epinephrine.
- Management of torsades de pointes. (it refers to a specific variety of ventricular tachycardia that exhibits distinct characteristics on the electrocardiogram).

Contraindications

- Hypotension (non-rate related).
- Cardiac arrest.
- Ischemic heart disease.

Adverse Reactions

- Dysrhythmias
- Hypotension
- Precipitation of angina
- Facial flushing

Drug Interactions

- MAO inhibitors and bretylium potentiate the effects of catecholamine.
- Beta adrenergic antagonists may blunt Inotropic response.
- Sympathomimetic and phosphodiesterase inhibitors may exacerbate dysrhythmia response.

Dose:

Adult

Infusion: 2-10 mcg/min titrated to increase HR and perfusion. Typical preparation: dilute 1 mg in 250 ml for a concentration of 4mcg/ml)

Pediatric

Infusion: 0.5 mcg/kg/min titrated to increased HR and perfusion. Typical preparation: dilute 0.6 mg/kg to create 100 ml solution.

Nursing Considerations

- Isoproterenol increases myocardial oxygen demand, and can induce serious dysrhythmia (including VT and VF). So deal with it with caution and monitor always for adverse effects.
- Administer via infusion pump to ensure precise flow rates.
- May exacerbate tachydysrhythmias due to digitalis toxicity or hypokalemia.
- Newer Inotropic agents have replaced isoproterenol in most clinical settings.
- If electronic pacing is available, it should be used instead of isoproterenol, or as soon as possible after the drug has been initiated.

56- Ketamine :

Trade names: Ketamin, Ketalar

Class: short-acting anesthetic

Pregnancy: (Category B)

Action: inhibit the action of, the N-methyl d-aspartate receptor (NMDAR).

Uses:

- Ketamine is frequently described as 'unique drug' because it has hypnotic(sleep producing), analgesic(pain relieving), and amnesic (short term memory loss) effects , no other drug used in clinical practice combines the three important features.
- Ketamine used as a anesthetic, however due to the severe hallucinations caused by ketamine, there are better anesthetics for victims with unknown medical history.
- Ketamine can be used in podiatry and other minor surgery, and occasionally for the treatment of migraine.
- There is ongoing research into the drug's usefulness in pain therapy, depression suppression, and for the treatment of alcoholism and heroin addiction.

Dose:

- by intramuscular injection, short procedures, initially 6.5–13 mg/kg (10 mg/kg usually produces 12–25 minutes of surgical anesthesia).
- By intravenous injection over at least 60 seconds, short procedures, initially 1–4.5 mg/kg (2 mg/kg usually produces 5–10 minutes of surgical anesthesia).
- By intravenous infusion of a solution containing 1 mg/mL, longer procedures, induction, total dose of 0.5–2 mg/kg; maintenance (using micro drip infusion), 10–45 micrograms/kg/minute, rate adjusted according to response

Contraindications:

- allergic to any ingredient in Ketamine
- have a condition in which a large increase in blood pressure would be harmful

Side effects:

- ☒ increased heart rate
- ☒ slurred speech
- ☒ paralyzed feeling

- ☒ nausea
- ☒ unable to move
- ☒ hallucination
- ☒ numbness
- ☒ impaired attention, memory and learning ability
- ☒ delirium, amnesia, impaired motor function, high blood pressure, depression and potentially fatal respiratory problems at higher doses

Symptoms of Ketamine overdose

Ketamine can induce unconsciousness and failure of the cardiovascular system, leading to death. There are at least seven Ketamine related deaths known nationally.

Nursing considerations:

- ☒ if Ketamine is administered rapidly by IV injection it often causes respiratory depression so it given only under severe precautions.
- ☒ In the majority of people it increase the heart workload resulting in increase of BP and Pulse so close monitoring of vital signs is very important.

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57- Lidocaine Hydrochloride:

Trade names: xylocaine ,Esracain

Class: Local anesthesia anti arrhythmic

Pregnancy: (Category B)

Action:

- Type 1 antiarrhythmic: decreases diastolic depolarization, decreasing automaticity of ventricular cells; increases ventricular fibrillation threshold.
- Local anesthetic: blocks the generation and conduction of action potentials in sensory nerves by reducing sodium permeability, reducing height and rate of rise of the action potential, increasing excitation threshold, and slowing conduction velocity.

Uses:

- As antiarrhythmic: Management of acute ventricular arrhythmias during cardiac surgery and MI (IV use). Use IM when IV administration is not possible or when ECG monitoring is not available and the danger of ventricular arrhythmias is great (single-dose IM use, for example, by paramedics in a mobile coronary care unit).

- As anesthetic: Infiltration anesthesia, peripheral and sympathetic nerve blocks, central nerve blocks, spinal and caudal anesthesia, retrobulbar and transtracheal injection; topical anesthetic for skin disorders and accessible mucous membranes

Dose:

by intravenous injection, in patients without gross circulatory impairment, 100 mg as a bolus over a few minutes (50 mg in lighter patients or those whose circulation is severely impaired), followed immediately by infusion of 4 mg/minute for 30 minutes, 2 mg/minute for 2 hours, then 1 mg/minute; reduce concentration further if infusion continued beyond 24 hours (ECG monitoring and specialist advice for infusion)

N.B

Following intravenous injection lidocaine has a short duration of action (lasting for 15–20 minutes). If an intravenous infusion is not immediately available the initial intravenous injection of 50–100 mg can be repeated if necessary once or twice at intervals of not less than 10 minutes

Contraindications:

- allergy to lidocaine or amide-type local anesthetics, CHF, cardiogenic shock, second- or third-degree heart block.

Side effects:

- CNS: Dizziness/light-headedness, fatigue, drowsiness, unconsciousness, tremors, twitching, vision changes; may progress to seizures, convulsions
- GI: Nausea, vomiting
- CV: Cardiac arrhythmias, cardiac arrest, vasodilatation, hypotension
- Respiratory: Respiratory depression and arrest
- Hypersensitivity: Rash, anaphylactoid reactions
- Other: Malignant hyperthermia

Nursing considerations:

- Don’t add lidocain to blood transfusion assembly.
- Make certain that vials state “for cardiac arrhythmias”.
- Use 5% dextrose solution to prepare drug (stable for 24 hours).
- Assess for history of hypersensitivity.
- Use electronic infusion device to regulate the infusion of the drug.
- Obtain B.P., Pulse, Resp. rate to use as baseline data to evaluate response to treatment.
- Drug should be given in a monitored environment.
- Assess B.P. frequently during administration.

- Assess for respiratory depression.
- If Adverse reactions occur, discontinue infusion & prepare for emergency management.

****

58- Magnesium sulfate :

Trade names: Magnesium sulfate

Class: Anticonvulsant, electrolyte, saline laxative

Pregnancy: (Category B)

Action:

- It is an important cation present in the extracelular fluid.
- It is an essential electrolyte for muscle contraction, certain enzyme system & never transmissions.
- Magnesium depresses CNS & control convulsion by blocking the release of acetylcholine at the myoneural junction.

Uses:

- Seizures associated with toxemia of pregnancy.
- Epilepsy
- laxative
- Hypomagnesaemia
- In total parenteral nutrition

Dose:

- Hypomagnesaemia :neonate IV 25-50mg/kg every 8-12 hours for 2-3 days, Children IM,IV 25-50 mg/kg/dose every 4-6 hours for 3-4 days, maintenance 30-60mg/kg/day, Adult IM,IV 1 g every 6 hours for 4 doses
- Maintenance electrolyte requirement 25-50 mg/kg/day
- Prevention of seizure recurrence in eclampsia, initially 4 g by intravenous injection over 5–15 minutes, , followed by intravenous infusion, 1 g/hour for at least 24 hours after last seizure

Contraindications:

- In the presence of heart block.
- In the presence of myocardial damage.

Side effects:

- Magnesium intoxication → depression , flushing, hypotension , respiratory paralysis, muscle paralysis, respiratory failure .

N.B.

- Suppression of knee-Jerk reflex can be used to determine toxicity
- Respiratory failure may result if drug is given after disappearance of this reflex.

Treatment of Magnesium intoxication:

- Use artificial ventilation immediately.
- Have calcium glutinate readily available for I.V. use.

Nursing considerations:

- For I.V. → administer. only 1.5 ml of 10% solution\minute.
- For I.M., inject the drug deep into the muscle using 50% solution.
- As a laxative, dissolve in a glass of ice water or other fluid to lessen disagreeable taste.
- Obtain baseline Mg level.
- Obtain history of kidney disease.
- Check with the physician before administering magnesium if any of the following conditions exist:
  - Absent patellar or knee jerk reflex.
  - R.R. less than 16\m
  - Urinary out put less than 100 ml\4 hrs .
  - Patient has a history of heart block or myocardial damage.
- Have available I.V. Calcium gluconate .
- Don't administer drug 2 hrs preceding delivery of the baby.
- If mother has received I.V. therapy of this drug 24 hours prior to delivery, assess the newborn for neurologic & respiratory depression.

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59- Mannitol :

Trade names: Osmitrol

Class: Osmotic diuretics

Pregnancy: (Category C)

Action:

- Increase the osmolarity of the glomerular filtrate which decrease the reabsorption of water while increasing the excretion of sodium and chloride.

Uses:

- Acute rend failure
- Cerebral edema
- To decrease intracranial pressure
- Glaucoma

Dose:

Cerebral edema 1 g/kg IV infusion followed by 0.25 g/kg every 6 hours for 24 hours

Contraindications:

- Anemia
- Dehydration
- pulmonary edema
- " Progressive heart failure or pulmonary congestion after mannitol therapy".

Side effects:

- Hypernatremia , electrolyte imbalance, acidosis
- Dehydration, dry mouth , thirst, edema, hypotension & hypertension , blurring of vision , headache , dizziness.

Nursing considerations:

- Mannitol should not be added to other I.V. solutions nor should it be mixed with other medications .
- If blood is to be administered at the sometime , add 20 mEq of sodium chloride to each liter of mannitol to prevent pseudo agglutination.
- Monitor & record vital signs .
- Observe for signs of electrolyte imbalance or dehydration.
- Observe for signs, & symptoms of pulmonary edema (dyspnea, cyanosis, frothy sputum).
- " Slow the rate & notify the physician".

****

60- Meperidine hydrochloride (Pethedine hydrochloride) :

Trade names: Demerol

Class: Narcotic analgesic, synthetic.

Pregnancy: (Category B / D if used for prolonged periods or in high doses at term)

Action:

- It has no antitussive effect.
- The duration of action is less than that of opium.

Uses:

- Sever pain.
- Renal & hepatic colic.
- Obstetric Preanasthetic medication.
- In minor surgeries.
- Spasm of GI tract, uterus.
- Prior some diagnostic procedures e.g. cystoscope.
- Post operative pain.

Dose:

- Acute pain, By subcutaneous or intramuscular injection, 25–100 mg, repeated after 4 hours; CHILD, by intramuscular injection, 0.5–2 mg/kg
  By slow intravenous injection, 25–50 mg, repeated after 4 hours
- Obstetric analgesia, by subcutaneous or intramuscular injection, 50–100 mg, repeated 1–3 hours later if necessary; max. 400 mg in 24 hours
- Premedication, by intramuscular injection, 25–100 mg 1 hour before operation; CHILD 0.5–2 mg/kg
- Postoperative pain, by subcutaneous or intramuscular injection, 25–100 mg, every 2–3 hours if necessary; CHILD, by intramuscular injection, 0.5–2 mg/kg

Note.

- In the postoperative period, the patient should be closely monitored for pain relief as well as for side-effects especially respiratory depression

Contraindications:

- Hypersensitivity.
- Convulsive states.
- Children less than 6 months.
- Head injuries.
- Diabetic acidosis.

Side effects:

- Respiratory depression , apnea, dizziness, euphoria headache, mental clouding, insomnia nausea, vomiting, constipation, dry mouth, skin rashes, laryngospasm, urinary retention, and decreased libido.

Nursing considerations:

- Use supportive nursing measures as relaxation techniques to relieve pain before using narcotics.
- Explore the source of pain, use non-narcotic analgesia if possible.
- Administer the medication when needed, prolonging the medication administration will decrease the effect of the medication.
- Monitor vital signs & mental status.
- Monitor Respiratory rate (drug may lead to respiratory depression).
- Monitor blood pressure (hypotension may occur)
- Monitor pulse rare (if 60\m withhold the drug).
- Watch for constricted pupils. Document it and notify the physician.
- Monitor bowel function, since drug may cause constipation .
- Encourage client to empty bladder every 3-4 hrs (since drug may cause urinary retention).
- If client is bed ridden, use side rails.
- Inform the client\family that the drug may become habit forming and leading to addiction.
- Document any history of asthma or other contraindications.
- Have emergency equipment and narcotic antagonist available .

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61- Metformin :

Trade names: Glucophage

Class: antidiabetics ,biguanides

Pregnancy: (Category B)

Action:

- Decreases hepatic production of glucose
- Decreases intestinal absorption of glucose
- Increases sensitivity to insulin.

Uses:

- Adjunctive management type 2 diabetes mellitus. May be used with diet and/or sulfonylurea oral hypoglycemic agents.

Dose:

- initially 500 mg with breakfast for at least 1 week
- then 500 mg with breakfast and evening meal for at least 1 week
- then 500 mg with breakfast, lunch and evening meal;
- max. 3 g daily in divided doses but most physicians limit this to 2 g daily

Contraindications:

- Hypersensitivity
- Metabolic acidosis of any cause
- Dehydration, sepsis, hypoxemia, impaired hepatic function, excessive alcohol ingestion (acute or chronic)
- Underlying renal dysfunction (serum creatinine >1.5 mg/dl in men or >1.4 mg/dl in women)
- Concurrent radiographic studies requiring IV administration of iodinated contrast media (temporarily withhold metformin)
- CHF requiring pharmacologic treatment.

Side effects:

- GI: abdominal bloating, diarrhea, nausea, vomiting, unpleasant metallic taste.
- Endo: hypoglycemia.
- F and E: LACTIC ACIDOSIS.
- Misc: decreased vitamin B12 levels.

Nursing considerations:

- Drugs may be taken with food to minimize GI upset.
- Stop the medication if signs of side-effects or ketoacidosis appear.
- Check for early symptoms of hypoglycemia.
- Assess diabetic more closely for infection or emotional disturbances that may increase insulin requirements.
- Explain the necessity for close regular medical supervision.
- Explain to patient how to test the urine for sugar & acetone.
- Explain the use & care of equipment & the storage of medication.
- Explain the importance of exercise & adhering to the prescribed diet.
- Explain the importance of carrying candy or sugar at all times to counteract
- hypoglycemia should it occur.
- Provide the client & family with a printed chart explaining symptoms of hypoglycemia , hyperglycemia & instructions concerning what to do for each.

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62- Methylprednisolone :

Trade names: Solumedrol

Pregnancy: (Category C)

Class: Corticosteroids "Glucocorticoid therapy ’, anti inflammatory

Action:

- In pharmacologic doses, all agents suppress inflammation and the normal immune response
- All agents have numerous intense metabolic effects (see Adverse Reactions and Side Effects)
- Suppress adrenal function Have negligible mineralocorticoid activity

Uses:

- suppression of inflammation (rheumatoid arthritis, systemic lupus erythematosus, acute gouty arthritis, psoriatic arthritis, ulcerative colitis, and Crohn’s disease).
- Severe allergic conditions that fail conventional treatment (bronchial asthma, allergic rhinitis, drug–induced dermatitis, and contact and atopic dermatitis).
- Chronic skin conditions (dermatitis herpetiformis, pemphigus, severe psoriasis and severe seborrheic dermatitis).

- Chronic allergic and inflammatory conditions of the uvea, iris, conjunctiva and optic nerves of the eyes .

Dose:

by mouth, usual range 2–40 mg daily;

By intramuscular injection or slow intravenous injection or infusion , initially 10–500 mg; graft rejection, up to 1 g daily by intravenous infusion for up to 3 days

Contraindications:

- Active untreated infections (may be used in patients being treated for some forms of meningitis)
- Lactation (avoid chronic use)
- Known alcohol, bisulfite, or tartrazine hypersensitivity or intolerance (some products contain these and should be avoided in susceptible patients).

Side effects:

- CNS: depression, euphoria, headache, increased intracranial pressure (children only), personality changes, psychoses, restlessness.
- EENT: cataracts, increased intraocular pressure.
- CV: hypertension.
- GI: PEPTIC ULCERATION, anorexia, nausea, vomiting.
- Derm: acne, decreased wound healing, ecchymoses, fragility, hirsutism, petechiae.
- Endo: adrenal suppression, hyperglycemia.
- F and E: fluid retention (long-term high doses), hypokalemia, hypokalemic alkalosis.
- Hemat: THROMBOEMBOLISM, thrombophlebitis.
- Metab: weight gain, weight loss.
- MS: muscle wasting, osteoporosis, aseptic necrosis of joints, muscle pain.
- Misc: cushingoid appearance (moon face, buffalo hump), increased susceptibility to infection.

Nursing considerations:

- ✓ Administer oral forms with food to minimize ulcerogenic effect.
- ✓ For chronic use, give the smallest dose possible.
- ✓ Corticosteroids should be discontinued gradually if used chronically.
- ✓ Document baseline weight , B.P. , Pulse & temperature.

- ✓ Frequently take BP, monitor body weight (signs of Na+ & H2O retention).
- ✓ Periodic serum electrolytes, blood sugar monitoring.
- ✓ Report signs & symptoms of side effects (cushing-like syndrome).
- ✓ Discuss with female client potentials of menstrual difficulties.
- ✓ Instruct the client to take diet high in protein & potassium.
- ✓ Instruct the client to avoid falls & accidents (osteoporosis causes
- ✓ pathological fracture).
- ✓ Remind the client to carry a card identifying the drug being used.
- ✓ Stress the need for regular medical supervision.
- ✓ Advise the client to delay any vaccination while taking these medications
- ✓ (weakened immunity).
- ✓ Explain the need to maintain general hygiene & cleanliness to prevent
- ✓ infection.

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63- Metoclopramide HCL:

Trade names: Pramin

Class: Anti-emetics

Pregnancy: (Category B)

Action:

It is dopamine receptor antagonist acts both centrally & peripherally, centrally due to the effect in the CTZ (inhibition) , Peripherally it stimulate the motility of the upper GIT without affecting gastric & biliary or pancreatic secretions. It relaxes the pyloric sphincter & increases the peristalsis of the duodenum resulting in accelerated gastric emptying & intestinal transit

Uses:

- Digestive disorders leading to relief GIT pain , Dyspepsia & regurgitation in peptic ulcer, reflux esophagitis & postanasthetic vomiting.
- Nausea & vomiting as in chemotherapy.
- Facilitate diagnostic procedure e.g. barium meal.

Dose:

by mouth, or by intramuscular injection or by intravenous injection over 1–2 minutes, 10 mg (5 mg in young adults 15–19 years under 60 kg) 3 times daily; CHILD up to 1 year (up to 10 kg) 1 mg twice daily, 1–3 years (10–14 kg) 1 mg 2–3 times daily, 3–5 years (15–19 kg) 2 mg 2–3 times daily, 5–9 years (20–29 kg) 2 mg 3 times daily, 9–14 years (30 kg and over) 5 mg 3 times daily

Note. Daily dose of metoclopramide should not normally exceed 500 micrograms/kg, particularly for children and young adults.

Contraindications:

- ✓ Seizure (epilepsy) ,
- ✓ Pheochromocytoma , &
- ✓ Intestinal obstruction.

Side effects:

- ✓ GI disturbances,
- ✓ transient hypertension,
- ✓ supraventricular tachycardia,
- ✓ dizziness &
- ✓ extrapyramidal effect “convulsion”.

Nursing considerations:

- Don’t give pramin to patients with epilepsy, pheochromocytomes or patients with intestinal obstruction.
- Administer oral medication 30 minutes before meal & at bed time .
- Administer I.V. injection slowly over 1-2 minutes.
- Be aware of the extrapyramidal symptoms specially in children

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64- Metronidazole :

Trade names: Flagyl

Class: systemic trichomonocide, amebicide

Pregnancy: (Category B)

Action:

- Effective against anaerobic bacteria & protozoa.
- Inhibit growth of trichomona & amebae by binding to DNA & inhibit nucleic acid synthesis → cell death .

- Well absorbed from GIT & widely distributed in tissues.
- Eliminated in urine (primarily) , 20% unchanged → red, brown discoloration in urine following P.O. or I.V. use .

Uses:

A - Systemic:

1. amebiasis, trichomoniasis.
2. amebic dysentery.
3. amebic liver abscess.
4. septicemia
5. Endocarditis
6. Giardiosis
7. to ↓ anaerobic infections of the abdomen following colorectal surgery, hysterectomy, emergency appendectomy.

B. Topical :

1. Inflammatory papules & pustules.

Dose:

- anaerobic infections (usually treated for 7 days and for 10 days in antibiotic-associated colitis), by mouth, either 800 mg initially then 400 mg every 8 hours or 500 mg every 8 hours, CHILD 7.5 mg/kg every 8 hours;
- by rectum, 1 g every 8 hours for 3 days, then 1 g every 12 hours, CHILD every 8 hours for 3 days, then every 12 hours, age up to 1 year 125 mg, 1–5 years 250 mg, 5–10 years 500 mg, over 10 years, adult dose;
- by intravenous infusion over 20 minutes, 500 mg every 8 hours;

CHILD 7.5 mg/kg every 8 hours

- high-risk procedures; child 7.5 mg/kg at induction; up to 3 further doses of 7.5 mg/kg may be given every 8 hours for high-risk procedures

Contraindications:

- Active organic disease of CNS.
- Blood disorders
- Lactation.
- 1st trimester of pregnancy.
- Topical Hypersensitivity.

Side effects:

- Dry mouth , metallic taste, diarrhea, dizziness abdominal discomfort, furry tongue, ataxia, vertigo & leucopenia.

Nursing considerations:

- If used IV, drug should not be given by IV bolus.
- If a primary IV fluid setup is used, discontinue the primary solution during infusion of metronidazole.
- Report any symptoms of CNS toxicity immediately e.g. ataxia or tremor, which necessitate withdrawal of drug.
- The drug may turn urine brown.
- Explain for the male partner , the necessity to have therapy.

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65- Midazolm :

Trade names: Dormicum

Class: Anxiolytics,sedative and anticonvulsant

Pregnancy: (Category D)

Action:

Like other benzodiazepines, midazolam acts on the benzodiazepine binding site of GABAA receptors. When bound it enhances the binding of GABA to the GABAA receptor which results in inhibitory effects on the central nervous system.[1]

Uses:

- produce sleepiness or drowsiness and to relieve anxiety before surgery or certain procedures.

Dose:

conscious sedation, by slow intravenous injection (approx. 2 mg/minute), initially 2–2.5 mg (ELDERLY 0.5–1 mg), increased if necessary in steps of 1 mg (ELDERLY 0.5–1 mg);
usual range 3.5–7.5 mg, ELDERLY max. 3.5 mg; CHILD by intravenous injection over 2–3 minutes, 6 months–5 years initially 50–100 micrograms/kg,
By intramuscular injection, 50–150 micrograms/kg; max. 10 mg
Premedication, by deep intramuscular injection, 70–100 micrograms/kg (ELDERLY 25–50 micrograms/kg) 20–60 minutes before induction, usual dose 2–3 mg; CHILD 1–15 years 80–200 micrograms/kg

Sedation of patients receiving intensive care, by intravenous infusion 20-50 microgram /kg/hour

Contraindications: Most are relative contraindications.

- Hypersensitivity,
- acute narrow angle glaucoma,
- shock, hypotension, head injury, and drug or alcohol use.

Side effects:

Residual 'hangover' effects after nighttime administration of midazolam such as sleepiness, impaired psychomotor and cognitive functions may persist into the next day which may impair the ability of users to drive safely and increase risks of falls and hip fractures.

Nursing considerations:

- Prior to the intravenous administration of midazolam in any dose, the immediate availability of oxygen, resuscitative drugs, age- and size-appropriate equipment for bag/valve/mask ventilation and intubation, and skilled personnel for the maintenance of a patent airway and support of ventilation should be ensured.
- Patients should be continuously monitored with some means of detection for early signs of hypoventilation, airway obstruction, or apnea, ie, pulse oximetry. Hypoventilation, airway obstruction, and apnea can lead to hypoxia and/or cardiac arrest unless effective countermeasures are taken immediately.
- The immediate availability of specific reversal agents (flumazenil) is highly recommended. Vital signs should continue to be monitored during the recovery period. Because intravenous midazolam depresses respiration

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66- Morphine sulfate :

Trade names: Roxanol

Class: Narcotic analgesic, morphine type.

Pregnancy: (Category C / D if used for prolonged periods or in high doses at term)

Action:

- Narcotic analgesics attach to specific receptor in the CNS resulting in analgesia- action
- Action exactly is unknown but may be by decreasing cell membrane permeability to sodium transmission of pain impulses.

Uses:

- Intrathecally, epidurally, orally or I.V. infusion for acute or chronic pain.
- Preoperative medication.
- To facilitate induction of anesthesia or to decrease the dose of anesthesia.

Dose:

- acute pain, by intramuscular injection, 10 mg every 4 hours if necessary (15 mg for heavier well-muscled patients); CHILD up to 1 month 150 micrograms/kg, 1–12 months 200 micrograms/kg, 1–5 years 2.5–5 mg, 6–12 years 5–10 mg.By slow intravenous injection, quarter to half corresponding intramuscular dose
- Premedication, by subcutaneous or intramuscular injection, up to 10 mg 60–90 minutes before operation; CHILD, by intramuscular injection, 150 micrograms/kg
- Myocardial infarction, by slow intravenous injection (2 mg/minute), 10 mg followed by a further 5–10 mg if necessary; elderly or frail patients, reduce dose by half
- Acute pulmonary edema, by slow intravenous injection (2 mg/minute) 5–10 mg

Contraindications:

- It is given epidural or intrathecal, if infection is present at injection site.
- In patients on anticoagulant therapy .
- Bleeding disorders.
- If patients have received parenteral corticosteroids within the past 2 weeks.

Side effects:

Respiratory depression , apnea, dizziness, euphoria headache, mental clouding, insomnia nausea, vomiting, constipation, dry mouth, skin rashes, laryngospasm, urinary retention, and decreased libido.

Nursing considerations:

- Use supportive nursing measures as relaxation techniques to relieve pain before using narcotics.
- Explore the source of pain, use non-narcotic analgesia if possible.
- Administer the medication when needed, prolonging the medication administration will decrease the effect of the medication.
- Monitor vital signs & mental status.
- Monitor Respiratory rate (drug may lead to respiratory depression).
- Monitor blood pressure (hypotension may occur)
- Monitor pulse rare (if 60\m withhold the drug).
- Watch for constricted pupils. Document it and notify the physician.

- Monitor bowel function, since drug may cause constipation .
- Encourage client to empty bladder every 3-4 hrs (since drug may cause urinary retention).
- If client is bed ridden, use side rails.
- Inform the client\family that the drug may become habit forming and leading to addiction.
- Document any history of asthma or other contraindications.
- Have emergency equipment and narcotic antagonist available .

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67- Acetylcystine :

Trade names: N-acetylcystine, Mucomyst

Class: Antidotes (for acetaminophen), mucolytic

Pregnancy: (Category B)

Action:

- PO: Decreases the buildup of a hepatotoxic metabolite in acetaminophen overdosage
- Inhal: Degrades mucus, allowing easier mobilization and expectoration.

Uses:

- PO: Emergency (within 24 hr) management of potentially hepatotoxic overdosage of acetaminophen
- Inhal: Mucolytic in the management of conditions associated with thick viscid mucous secretions.

Dose:

IV infusion 150 mg/kg in 200 ml of D 5% over 15 min then 50mg /kg in 500 ml of D 5% over 4 hours then 100 mg/kg/ 16 hours in 1 L of D5% .

Contraindications:

- Hypersensitivity.

Side effects:

- CNS: drowsiness.
- EENT: rhinorrhea.
- Resp: bronchial/tracheal irritation, bronchoconstriction, chest tightness, increased secretions.

- GI: nausea, vomiting, stomatitis.
- Derm: clamminess, urticaria.
- Misc: chills, fever.

Nursing considerations:

With the administration of MUCOMYST, the patient may observe initially a slight disagreeable odor that is soon not noticeable. With a face mask there may be stickiness on the face after nebulization. This is easily removed by washing with water.

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68- Naloxane :

Trade names: Narcan

Class: Narcotic antagonist.

Pregnancy: (Category B)

Action:

- Block the action of narcotic analgesic by displacing previously given narcotics from their receptor sites or preventing them from attaching to opiate receptors.
- The duration of action of naloxone is shorter than that of the narcotic analgesic so the respiratory depression may return when the narcotic antagonist has washed off the body.

Uses:

- Respiratory depression induced by narcotics.
- Drug of choice when the depressant drug is unknown.
- Diagnosis of acute opiate overdose.

Dose:

- By intravenous injection, 100–200 micrograms (1.5–3 micrograms/kg); if response inadequate, increments of 100 micrograms every 2 minutes; further doses by intramuscular injection after 1–2 hours if required
- CHILD by intravenous injection, 10 micrograms/kg; subsequent dose of 100 micrograms/kg if no response; if intravenous route not possible, may be given in divided doses by intramuscular or subcutaneous injection
- NEONATE by subcutaneous, intramuscular, or intravenous injection, 10 micrograms/kg, repeated every 2 to 3 minutes or by intramuscular injection, 200 micrograms (60 micrograms/kg) as a single dose at birth (onset of action slower)

Contraindications:

- Sensitivity to drug.

- Narcotic addicts since it will cause sever withdrawal symptoms.
- Neonates.

Side effects:

- Nausea, vomiting, sweating, hypertension, tremors.
- If used postoperatively: tachycardia, pulmonary edema, hypo or hypertension.

Nursing considerations:

- Determine the etiology of respiratory depression.
- Assess & obtain baseline vital signs.
- Monitor respiration closely after the duration of action.
- Have emergency drugs & equipment available.
- If the patient is comatosed, turn him to his side to avoid aspiration.
- Maintain safe environment (side rails & soft support).

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69- Nefidipine :

Trade names: Pressolat, Adalat

Class: calcium channel blocking agent (anti-angina, antihypertensive).

Pregnancy: (Category C)

Action:

These agents inhibit the influx of calcium through the cell membrane resulting in a depression of automatically and conduction velocity in both smooth and cardiac muscles leading to:

1. Myocardial contractility. .
2. Inhibit spasm of coronary arteries → dilatation.
3. Peripheral vasodilatation → ↓ peripheral resistance.
4. ↓ S. A. node automatically and conduction → ↓heart rate.

Uses:

vasospastic angina, essential hypertension

Dose:

Raynaud's phenomenon, initially 5 mg 3 times daily, adjusted according to response to 20 mg 3 times daily ,angina prophylaxis not recommended, Hypertension, not recommended modified release : hypertension, 20–30 mg once daily, increased if necessary; max. 90 mg once daily , Angina prophylaxis, 30 mg once daily, increased if necessary; max. 90 mg once daily

Contraindications:

hypersensitivity, lactation

Side effects:

- pulmonary and peripheral edema
- hypotension
- headache
- upset stomach
- dizziness or lightheadedness
- excessive tiredness
- flushing (feeling of warmth)
- heartburn
- Tachycardia
- muscle cramps
- enlargement of gum tissue around teeth
- constipation
- nasal congestion
- cough
- decreased sexual ability

Nursing considerations:

- Discuss with the patient/family the goals of therapy.
- Teach them how to take pulse and blood pressure. Hold the medication in case of hypotension or bradycardia and consult the treating Dr.
- Instruct the client to report any untoward sings as dizziness.
- In case of postural hypotension, advise the client to change position.
- Advise client to sit down immediately if fainting occurs.
- Calcium antagonists should be taken with meals to ↓ GI irritation.

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70- Neostigmine Methylsulfate

Trade names: Neostigmine

Class: Anticholinesterase ’reversal of muscle relaxant

Pregnancy: (Category C)

Action:

reverse cholinesterase inhibitor. By interfering with the breakdown of acetylcholine, Neostigmine indirectly stimulates both nicotinic and muscarinic receptors

Uses:

The symptomatic control of myasthenia gravis when oral therapy is impractical.

The prevention and treatment of postoperative distention and urinary retention after mechanical obstruction has been excluded.

Reversal of effects of nondepolarizing neuromuscular blocking agents (e.g., tubocuranne, metocurine, gallamine or pancuronium) after surgery.

Dose:

reversal of non-depolarising neuromuscular blockade, by intravenous injection over 1 minute, 50–70 micrograms/kg (max. 5 mg) after or with atropine sulfate 0.6–1.2 mg

Contraindications:

Neostigmine Methylsulfate Injection is contraindicated in patients with known hypersensitivity to the drug. It is also contraindicated in patients with peritonitis or mechanical obstruction of the intestinal or urinary tract.

Side effects:

- Dizziness, convulsions, loss of consciousness, drowsiness, headache, dysarthria, miosis and visual changes.
- Cardiac arrhythmias .
- Rash and urticaria.
- Nausea, emesis, flatulence and increased peristalsis.
- Diaphoresis, flushing and weakness.

Nursing considerations:

- Neostigmine Methylsulfate Injection should be used with caution in patients with epilepsy, bronchial asthma, bradycardia, recent coronary occlusion, vagotonia, hyperthyroidism, cardiac arrhythmias or peptic ulcer.

- When large doses of Neostigmine Methylsulfate Injection are administered, the prior or simultaneous injection of atropine sulfate may be advisable.
- Separate syringes should be used for the neostigmine methylsulfate and atropine. Because of the possibility of hypersensitivity in an occasional patient, atropine and antishock medication should always be readily available.

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71- Nitrates : Isosorbide Mononitrate

Trade names: Isoral, Cordil, Isotard

Class: coronary vasodilating effect

Pregnancy: (Category C)

Action:

- The principal pharmacological action of isosorbide dinitrate is relaxation of vascular smooth muscle and consequent dilatation of peripheral arteries and veins, especially the latter.
- Dilatation of the veins promotes peripheral pooling of blood and decreases venous return to the heart, thereby reducing left ventricular end- diastolic pressure and pulmonary capillary wedge pressure (preload).
- Arteriolar relaxation reduces systemic vascular resistance, systolic arterial pressure, and mean arterial pressure (afterload).
- Dilatation of the coronary arteries also occurs

Uses:

- Prophylaxis and treatment of acute angina pectoris.
- Treatment of chronic angina pectoris.
- Testament of hypertension associated with MI or CHF.
- Nitroglycerin ointment for treatment of Raynaud's disease.

Dose:

Isosorbide Mononitrate : initially 20 mg 2–3 times daily or 40 mg twice daily (10 mg twice daily in those who have not previously received nitrates); up to 120 mg daily in divided doses if required
Isosorbide Dinitrate By mouth, daily in divided doses, angina 30–120 mg, left ventricular failure 40–160 mg, up to 240 mg if required

By intravenous infusion, 2–10 mg/hour; higher doses up to 20 mg/hour may be required

Contraindications:

- Sensitivity to nitrates ⟶ Hypotension.
- Sever anemia.
- Hypotension.
- Head trauma.
- Cerebral hemorrhage.

Side effects:

1. Headache, syncope, dizziness.
2. Postural hypotension, transient flushing, and palpitation.
3. Topical application may lead to dermatitis.

❖ **Drug interaction:** Antihypertensive agents, Beta-adrenergic blocking agents, and calcium-channel blocking agent (they may lead to additive hypotension.

Nursing considerations:

- medications should be taken on an empty stomach.
- Carry sublingual tablets in a glass bottle, tightly capped.
- If anginal pain is not relieved in 5 minutes by first sublingual tablet, to take up to 2 more tablets at 5 minutes interval. If pain has not subsided 5 minutes after the 3rd tablet, client should be taken to the emergency room.
- Take sublingual tablets 5-15 minutes prior to any situation likely to cause anginal pain such as climbing stairs.
- Take sublingual tablets while sitting to avoid postural hypotension.

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72- Nitroprusside sodium :

Trade names: Nitropress

Class: Vasodilator antihypertensive drugs

Pregnancy: (Category C)

Action:

Its mechanism of action appears to be liberation of nitric oxide (NO), converting Hemoglobin to cyanomethaemaglobin. Nitroprusside also releases cyanide ions which are converted in the liver to thiocyanate by the enzyme rhodanase, a reaction which requires a sulfur donor such as thiosulfate.

Thiocyanate is then excreted by the kidney. In the absence of sufficient thiosulfate, cyanide ions can quickly reach toxic levels.

The half-life of nitroprusside is less than 10 minutes although thiocyanate has an excretion half life of several days. The duration of treatment should not exceed 72 hours and thiocyanate plasma concentrations should be monitored.

Uses:

- immediate reduction of blood pressure of patients in hypertensive crises.
- producing controlled hypotension in order to reduce bleeding during surgery.
- treatment of acute congestive heart failure.

Dose:

- Hypertensive crisis, by intravenous infusion, initially 0.5–1.5 micrograms/kg/minute, then increased in steps of 0.5 micrograms /kg/minute every 5 minutes within range 0.5–8 micrograms/kg/minute (lower doses in patients already receiving other antihypertensives); stop if response unsatisfactory with max. dose in 10 minutes
- Maintenance of blood pressure at 30–40% lower than pretreatment diastolic blood pressure, 20–400 micrograms/minute (lower doses for patients being treated with other antihypertensives)

Contraindications:

- should not be used in the treatment of compensatory hypertension, where the primary homodynamic lesion is aortic coarctation or arteriovenous shunting.
- should not be used to produce hypotension during surgery in patients with known inadequate cerebral circulation, or in moribund patients (A.S.A. Class 5E) coming to emergency surgery.
- Patients with congenital (Leber's) optic atrophy or with tobacco amblyopia have unusually high cyanide! thiocyanate ratios.
- Sodium nitroprusside should not be used for the treatment of acute congestive heart failure associated with reduced peripheral vascular resistance such as high-output heart failure that may be seen in endotoxic sepsis.

Side effects:

- allergic reaction: hives; difficulty breathing; swelling of face, lips, tongue, or throat.
- feeling extremely light-headed, even while lying down;
- confusion, ringing in your ears;

- fainting, breathing that stops;
- gasping or struggling to breathe;
- dizziness with nausea and vomiting, confusion, rapid breathing, and seizure;
- tremors, chills, bowel or bladder urgency;
- fast, slow, or uneven heart rate;
- easy bruising or bleeding; or muscle pain or weakness, numb or cold feeling in your arms and legs.

Nursing considerations:

This drug can cause very large decreases in blood pressure so proper monitoring, serious injury or death could result.

Nitroprusside, especially in larger-than-recommended doses, might cause cyanide poisoning. Therefore, be sure not to exceed the recommended dose, instructed by the doctors especially if the patient has kidney problems.

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73- Noradrenaline :

Trade names: Norepinephrine

Class: Vasoconstrictor sympathomimetics

Pregnancy: (Category C)

Action:

Noradrenalin (Norepinephrine) tartrate is a substance released naturally by the nerve cells. It produces wide ranging effects on many areas of the body and is often referred to as a 'fight or flight' chemical, as it is responsible for the body's reaction to stressful situations.

Uses:

- Sudden, life threatening low blood pressure (acute hypotension)

Use with caution in:

- A severe form of angina pectoris, not caused by exertion (Prinzmetal's angina)
- Abnormally high amount of carbon dioxide in the blood (hypercabnia)
- Blood clot in one of the blood vessels in the extremities (peripheral vascular thrombosis)
- Blood clot in the artery which supplies blood to the heart (coronary thrombosis)

- Blood clot in the artery which supplies blood to the intestines (mesenteric thrombosis)
- Low blood pressure following a heart attack
- Low levels of oxygen in the tissues (hypoxia)

Dose:

Acute hypotension, by intravenous infusion, via central venous catheter, of a solution containing noradrenaline acid tartrate 80 micrograms/mL (equivalent to noradrenaline base 40 micrograms/mL) at an initial rate of 0.16–0.33 mL/minute, adjusted according to response

Contraindications:

- Children.
- Allergy.

Side effects:

- Headache
- Slow heart rate (bradycardia)
- High blood pressure (hypertension)
- Inadequate blood flow leading to low levels of oxygen in the tissues of the extremities (peripheral ischemia), which may lead to gangrene

Nursing considerations:

- The infusion must be changed every 24 hours ·
- Monitor urine output hourly and check distal pulses ·
- Monitor serum glucose.
- Give via volumetric pump to regulate flow.
- During infusion monitor ECG,BP, CO, CVP, PAWP, HR, urine output, color and temperature of extremities initially every 2 minutes.
- Check infusion site frequently for signs of extravasation If occurs stop infusion immediately, infiltrate the area with 5 - 10 mg Phentolamine(alpha blocker) diluted in 10 - 15 ml 0.9 % normal saline subcutaneously and liberally

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74- Omeprazole :

Trade names: Prilosec

Class: Proton Pump Inhibitors " Ulcer-healing drugs

Pregnancy: (Category C)

Action:

- Binds to an enzyme on gastric parietal cells in the presence of acidic gastric pH, preventing the final transport of hydrogen ions into the gastric lumen.
- Therapeutic Effects:
  - Diminished accumulation of acid in the gastric lumen with lessened gastroesophageal reflux
  - Healing of duodenal ulcers.

Uses:

- Management of GERD
- Management of duodenal ulcers (with or without anti-infective for H. pylori)
- Treatment of pathologic hypersecretory conditions, including Zollinger-Ellison syndrome.

Dose:

by mouth, prophylaxis against stress ulcer 20 mg/12 hours,
NSAID-associated duodenal or gastric ulcer and gastroduodenal erosions, 20 mg once daily for 4 weeks, followed by a further 4 weeks if not fully healed; prophylaxis in patients with a history of NSAID-associated duodenal or gastric ulcers, gastroduodenal lesions, or dyspeptic symptoms who require continued NSAID treatment, 20 mg once daily
Gastric acid reduction during general anaesthesia (prophylaxis of acid aspiration), 40 mg on the preceding evening then 40 mg 2–6 hours before surgery
CHILD over 2 years, severe ulcerating reflux oesophagitis, 0.7–1.4 mg/kg daily for 4–12 weeks; max. 40 mg daily (to be initiated by hospital paediatrician)

Contraindications:

- Hypersensitivity.

Use Cautiously in:

- Liver disease (dosage reduction may be necessary)
- Pregnancy, lactation, or children (safety not established).

Side effects:

- CNS: dizziness, drowsiness, fatigue, headache, weakness.
- CV: chest pain.
- GI: abdominal pain, acid regurgitation, constipation, diarrhea, flatulence, nausea, vomiting.
- Derm: itching, rash.
- Misc: allergic reactions.

Nursing considerations:

- Nurse should instruct the pt to take each dose of Prilosec with a full glass (8 ounces) of water.
- Prilosec is usually taken before eating.

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75- Octreotide :

Trade names: Sandostatin

Class: Antidiarrheals, hormones

Pregnancy: (Category B)

Action:

- Suppresses secretion of serotonin and gastroenterohepatic peptides
- Increases absorption of fluid and electrolytes from the GI tract and increases transit time
- Decreases levels of serotonin metabolites
- Also suppresses growth hormone, insulin, and glucagon.
- Therapeutic Effects:
  - Control of severe flushing and diarrhea associated with GI endocrine tumors.

Uses:

- Treatment of severe diarrhea and flushing episodes in patients with GI endocrine tumors, including metastatic carcinoid tumors and vasoactive intestinal peptide tumors (VIPomas).
- Unlabelled Uses:
  - Relief of symptoms and suppressed tumor growth in patients with pituitary tumors associated with acromegaly

- Management of diarrhea in AIDS patients or patients with fistulas.

Dose:

- prophylaxis following pancreatic trauma or surgery subcutaneous every 8 hours, 100 mic/kg
- In esophageal varices 50-100 mic IV injection then infusion of 25 – 50 mic/hour for 2-3 days

Contraindications:

- Hypersensitivity.

Use Cautiously in:

- Gallbladder disease (increased risk of stone formation)
- Renal impairment (dosage reduction may be necessary)
- Hyperglycemia or hypoglycemia (changes in blood sugar may occur)
- Fat malabsorption (may be aggravated)
- Pregnancy or lactation (safety not established).

Side effects:

- CNS: dizziness, drowsiness, fatigue, headache, weakness.
- EENT: visual disturbances.
- CV: edema, orthostatic hypotension, palpitations.
- GI: abdominal pain, cholelithiasis, diarrhea, fat malabsorption, nausea, vomiting.
- Derm: flushing.
- Endo: hyperglycemia, hypoglycemia.
- Local: injection site pain.

Nursing considerations:

- Sandostatin ampoules and multi-dose vials should be stored at refrigerated temperatures 2-8°C (36-46°F) and protected from light.
- Because the drug may result in hypoglycemia or hyperglycemia monitor blood glucose level for the pt.
- Cardiac conduction abnormalities have also occurred during treatment with Sandostatin so the nurse should monitor the pt’s vital signs , ECG…etc.

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76- Oxytocin :

Trade names: Pitocin, Syntocinon

Class: Labor inducer " induce uterine contractions ", oxytocic agent.

Pregnancy: (Category B)

Action:

It has uterine stimulant, vasopressive & antidiuretic properties.

- Mimics uterine contractions of normal labor.
- Facilitates ejection of milk from the breasts by stimulating smooth muscles.

Uses:

- Antepartum induction or stimulation of labor.
- Uterine inertia (hypotonic contractions).
- For induction of labor in case of preeclampsia, eclampsia ,maternal diabetes & other conditions.
- To hasten uterine involution .
- Intranasally for postpartum hemorrhage & uterine atony.

Dose:

For Prevention and treatment of hemorrhage

Prevention of postpartum hemorrhage, after delivery of placenta, by slow intravenous injection, 5 units (if infusion used for induction or enhancement of labor, increase rate during third stage and for next few hours)

Note:

May be given in a dose of 10 units by intramuscular injection [unlicensed route] instead of oxytocin with ergometrine

Treatment of postpartum hemorrhage, by slow intravenous injection, 5–10 units, followed in severe cases by intravenous infusion of 5–30 units in 500 mL infusion fluid at a rate sufficient to control uterine atony.

Important

Avoid rapid intravenous injection (may cause short-lasting drop in blood pressure).

Contraindications:

- Hypersensitivity
- cephalopelvic disproportion (C.P.D.)

- Malpreresentation
- undilated cervix
- History of cesarean delivery.

Side effects:

- Tetanic uterine contraction, rupture uterus Hypertension , tachycardia.
- To Fetus :- it may cause death, intracranial hemorrhage, brady or tachycardia

Nursing considerations:

1- The physician should be available during administration of the drug.
2- Use Y-tubing for I.V. administration (one bottle contain oxytocin & another free) .
3- Note any history of hypersensitivity & other contraindications.
4- Check for cervical dilation & uterine contractions patterns.
5- Remain with the client throughout the administration of medication.
6- Monitor fetal heart rate at least every 10 minutes.
7- Check vital signs every 15minutes.
8- Prevent uterine rupture & fetal damage by clamping off I.V. oxytocin , start medication – Free fluid , provide O2 & notify the physician in case of hypertonic uterine contraction & abnormal fetal heart rate patterns.

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77- Pancuronium :

Trade names: Pavulon

Class: Non-depolarizing muscle relaxants

Pregnancy: (Category C)

Action:

Pancuronium, is a non-depolarizing neuromuscular blocking agent that competes with acetylcholine for cholino- ceptive sites at the postjunctional membrane and thereby blocks competitively the transmitter action of acetylcholine resulting in muscle paralysis.

Uses:

Pancuronium bromide is indicated as an adjunct to general anesthesia to facilitate tracheal intubation and to provide skeletal muscle relaxation during surgery or mechanical ventilation.

Dose:

by intravenous injection, initially for intubation 50–100 micrograms/kg then 10–20 micrograms/kg as required; CHILD initially 60–100 micrograms/kg, then 10–20 micrograms/kg, Neonate 30–40 mic/kg initially then 10–20 micrograms/kg

Intensive care, by intravenous injection, 60 mic/kg every 60–90 minutes

Contraindications:

- Hypersensitivity.

Side effects:

- chest pain
- fever
- pain, redness, swelling or irritation at the injection site
- shortness of breath, wheezing
- unusual muscle weakness or tiredness
- flushing (reddening of skin)
- rash, itching

Nursing considerations:

- May administered undiluted by rapid I.V injection as requested.
- Monitor parameters (Heart rate, blood pressure, assisted ventilation status, cardiac monitor, and ventilated required.
- Nurse should not alter the pt's state of unconsciousness

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78- Penicillin G sodium:

Trade names: Crystalline Penicillin

Class: Antibiotic " Broad-spectrum penicillin '

Pregnancy: (Category B)

Action:

- Inhibit bacterial cell wall synthesis

Uses:

- Gram +Ve cocci "streptococci, meningococci, pneumococei"
- Subacute bacterial endocarditis caused by group A streptococci.
- Gonorrhea due to gonococci.
- Diphtheria, tetanus, anthrax, gas gangrene.
- Prophylaxis for rheumatic fever.

Dose:

100 000 -300 000 unit/kg/day in divided doses 4-6 hours

Contraindications:

Hypersensitivity .

Side effects:

- Rapid I.V. administration may cause hyperkalemia & cardiac arrhythmias.
- Diarrhea , abdominal cramps \pain , nausea, vomiting.
- Psendomembranous colitis, thrombocytopenia, leucopenia
- Thrombophlebitis + Electrolytes imbalance following I.V. use.
- Hepatotoxicity.

Nursing considerations:

- I.M. is preferred, minimize discomfort by using solution of up to 100,000 units \ml.
- Monitor intake & output (I & O) .
- Solution may be stored at room temp. for 24 hr or in refrigerator for 1 week.
- Use 1% - 2% lidocaine as a diluent for I.M. use to decrease pain at injection site.
- Note the penicillin G should not be mixed during I.V. administration with the following drugs: aminophylline, gentamycin, heparin, vancomycin & sodium bicarbonate.

****

79- Phenobarpitol :

Trade names: Luminal

Class: sedative- anticonvulsant- barbiturate.

Pregnancy: (Category D)

Action:

- ☒ Long-acting barbiturate- act as a sedative- hypnotic and anticonvulsant by producing CNS depression.
- ☒ It increase the inhibitory activity of the on nerve synapses.

Uses:

- Preanasthetic medication.
- Sedation
- Hypnotic

- Epilepsy
- in tetanus & eclampsia (as anticonvulsant) .

Dose:

- by mouth, 60–180 mg at night; CHILD 5–8 mg/kg daily
  Control of acute seizures, by intramuscular injection, 200 mg, repeated after 6 hours if necessary; CHILD 15 mg/kg as a single dose
- Status epilepticus, by intravenous injection (dilute injection 1 in 10 with water for injections), 10 mg/kg at a rate of not more than 100 mg/minute; max. 1 g

Contraindications:

Hypersensitivity.

Side effects:

- Headache,
- fever,
- megaloblastic anemia,
- dizziness,
- hypotension,
- nausea, and
- vomiting epigastric pain.

Treatment of overdose toxicity:

- Maintain & assist respiration as indicated.
- Support circulation by vasopressor & I.V. fluids as required.
- Aspirate stomach content, take care to avoid pulmonary aspiration.
- Diuretics may be given as ordered.
- Intake & output measurement.
- Dialysis if indicated.

Nursing considerations:

1- If given I.V, closely monitor the rate of flow. Rapid administration may lead to respiratory depression.
2- Monitor the site of I.V. for soft of extravasation which cause sever pain, nerve damage & necrosis.
3- Avoid the use of alcoholic beverages.
4- Instruct the client not to drive a car or operate other hazardous machinery after taking the medication .
5- Take the medication only as prescribed.

6- If used for hypnotic effect, give ½ hr before bedtime.
7- Teach patient about sings and symptoms of toxicity, and instruct patient to report them to treating physician.
8- If taken for 8 weeks or more, instruct patient not to stop it suddenly to avoid withdrawal symptoms as convulsion.
9- Keep the drug out of reach of the children.

****

80- Phenytoin :

Trade names: Epanutin, Dilantin

Class: anticonvulsant , antiarrhythmic

Pregnancy: (Category D)

Action:

acts in the motor cortex of the brain to reduce the spread of electrical discharges from the rapidly firing epileptic foci in this area. Also activity of centers in the brain stem responsible for the tonic phase of grand mal seizures

Uses:

- Chronic epilepsy.
- Premature ventricular contractions.
- Tachycardia.

Dose:

by mouth, initially 3–4 mg/kg daily or 150–300 mg daily (as a single dose or in 2 divided doses) increased gradually as necessary; usual dose 200–500 mg daily; CHILD initially 5 mg/kg daily in 2 divided doses, usual dose range 4–8 mg/kg daily (max. 300 mg)
By intravenous injection : status epilepticus, 15 mg/kg at a rate not exceeding 50 mg per minute, as a loading dose; maintenance doses of about 100 mg should be given thereafter at intervals of every 6–8 hours; rate and dose reduced according to weight; CHILD 15 mg/kg as a loading dose (neonate 15–20 mg/kg at rate of 1–3 mg/kg/minute)
Prophylaxis of convulsion : 4-7 mg/kg/day, divided into 2 doses.

Ventricular arrhythmias , by intravenous injection via caval catheter " Central Line", 3.5–5 mg/kg at a rate not exceeding 50 mg/minute, with blood pressure and ECG monitoring; repeat once if necessary.

Contraindications:

- Hypersensitivity.

Side effects:

- Drowsiness,
- ataxia,
- dizziness,
- measles-like rash,
- gingival hyperplasia,
- Hirsutism (excessive hair growth) ,and
- hypoglycemia.

N.B :

Rapid I.V. administration → Hypotension & arrhythmia.

Nursing considerations:

- I.V. phenytoin may forms a precipitate, so flush tubing by saline (not dextrose) before & after administration.
- Assess for hypersensitivity.
- If a pregnant woman takes this drug, tell her not to breast-feed her baby.
- Obtain liver & kidney function studies.
- Monitor serum drug levels on a routine basis.
- During I.V. therapy, monitor B.P. for signs of hypotension .
- Take e food to minimize GI upset.
- If the patient is diabetic, monitor for signs of hypoglycemia.
- Oral hygiene to minimize bleeding from the gum.
- Report any excessive growth of hair.

****

81- Potassium Chloride:

Trade names: KCL for IV preparation

Pregnancy: (Category A)

Class: Electrolyte, mineral.

Action:

Uses:

- Patients receiving high doses of potent diuretics.
- Patients having secondary hyperaldosteronism.

- When there is excessive loss of potassium in feces.
- When potassium intake is not adequate (especially in elderly).

Dose:

by slow intravenous infusion, depending on the deficit or the daily maintenance requirements " usually 1-2 mEq/kg/day "

Contraindications:

- Severe renal failure.
- If serum potassium level is over 5 mmol/liter.

Side effects:

- Hyperkalemia
- Phlebitis at injection site.
- Heart toxicity if infused rapidly.
- With oral tablet: Dyspepsia, nausea and vomiting, esophageal or bowel ulceration.

Nursing considerations:

- Mix solution well.
- Administer solution slowly (500 ML of solution over 2-3 hours)
- Monitor serum potassium level.
- Assess insertion site for signs of phlebitis.
- Give oral preparation on full stomach

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82- Prednisone :

Trade names: deltasone

Class: Corticosteroids "Glucocorticoid therapy ', anti inflammatory

Pregnancy: (Category C/ D if used in 1st trimester)

Action:

They are a group of natural hormones produced by the adrenal cortex.

- They are used for a variety of therapeutic purposes.
- Many slightly modified synthetic variants are available today.
- Some patients respond better to one substance than to another.
- These hormones influence many metabolic pathways & all organ systems & are essential for survival.

- The release of corticosteroids is controlled by hormones such as corticotropin-releasing factor produced by the hypothalamus & ACTH produced by the anterior pituitary.

Uses:

- Replacement therapy : adrenal insufficiency (Addison's disease) .
- Rheumatic disorders : rheumatoid arthritis & osteoarthritis.
- Collagen diseases: systemic lupus erythromatosus, rheumatic cardiac.
- Allergic diseases: drug hypersensitivity , urticarial transfusion reaction.
- Respiratory diseases: bronchial asthma , rhinitis.
- Ocular diseases : allergic & inflammatory conjunctivitis, keratitis
- Dermatological diseases: psoriasis, contact dermatitis, urticaria.
- Diseases of the GIT: ulcerative colitis.
- Nervous system : Myasthenia gravis.
- Malignancies: leukemia, lymphoma.
- Nephrotic syndrome.
- Hematologic diseases: hemolytic anemia, thrombocytopenic purpura.
- Miscellaneous: septic shock, liver cirrhosis, stimulation of surfactant
- production, prevention of organ rejection.

Dose:

by mouth, initially, up to 10–20 mg daily (severe disease, up to 60 mg daily), preferably taken in the morning after breakfast; can often be reduced within a few days but may need to be continued for several weeks or months

Maintenance, usual range, 2.5–15 mg daily, but higher doses may be needed; cushingoid side-effects increasingly likely with doses above 7.5 mg daily

By intramuscular injection, prednisolone acetate, 25–100 mg once or twice weekly

Contraindications:

- If infection is suspected (Mask signs & symptoms).
- Peptic ulcer.
- Acute glomerulonephritis.
- Cushing's syndrome .
- Congestive heart failure.
- Hypertension.
- Hyperlipidemia.

Side effects:

Prolonged therapy may cause Cushing-like syndrome & atrophy of the adrenal cortex & subsequent adrenocortical insufficiency.

N.B:

Steroid withdrawal syndrome may lead to : anorexia, nausea, vomiting, weight loss , headache , myalgia & hypotension.

Side effects include:

Edema, alkalosis, hypokalemia, hypertension, CHF muscle wasting , weakness, osteoporosis, nausea & vomiting.

Headache , hypercholesterolemia , hirsutism, amenorrhea, depression.

Redistribution of body fats: thin extremities and fat trunk, moon-like face, buffalo hump.

Nursing considerations:

- Administer oral forms with food to minimize ulcerogenic effect.
- For chronic use, give the smallest dose possible.
- Corticosteroids should be discontinued gradually if used chronically.
- Document baseline weight , B.P. , Pulse & temperature.
- Frequently take BP, monitor body weight (signs of Na+ & H2O retention).
- Periodic serum electrolytes, blood sugar monitoring.
- Report signs & symptoms of side effects (cushing-like syndrome).
- Discuss with female client potentials of menstrual difficulties.
- Instruct the client to take diet high in protein & potassium.
- Instruct the client to avoid falls & accidents (osteoporosis causes
- pathological fracture).
- Remind the client to carry a card identifying the drug being used.
- Stress the need for regular medical supervision.
- Advise the client to delay any vaccination while taking these medications (weakened immunity).
- Explain the need to maintain general hygiene & cleanliness to prevent infection.

****

83- Promethazine:

Trade names: phenergan, prothiazine

Class: Antihistamines

Pregnancy: (Category C)

Action:

- It may cause sever drowsiness.
- It also provides antiemetic effect
- (it affects the chemo receptor trigger zone).
- It also has a sedative action, effective in vertigo

→ Vestibular apparatus

Uses:

- ☒ Motion sickness.
- ☒ Nausea & vomiting due to anesthesia.

Dose:

by mouth, 25 mg at night increased to 25 mg twice daily if necessary or 10–20 mg 2–3 times daily; CHILD under 2 years not recommended, 2–5 years 5–15 mg daily in 1–2 divided doses, 5–10 years 10–25 mg daily in 1–2 divided doses, Premedication, CHILD under 2 years not recommended, 2–5 years 15–20 mg, 5–10 years 20–25 mg

By deep intramuscular injection, 25–50 mg; max. 100 mg; CHILD 5–10 years 6.25–12.5 mg, Premedication, 25–50 mg 1 hour before operation; CHILD 5–10 years, 6.25–12.5 mg, By slow intravenous injection in emergencies, 25–50 mg as a solution containing 2.5 mg/mL in water for injections; max. 100 mg

Contraindications:

- ☒ Hypersensitivity.
- ☒ Pregnancy.
- ☒ Glaucoma
- ☒ Prostatic hypertrophy
- ☒ CNS depression (phenothiazine type).
- ☒ Bone marrow depression

☒ Comatose patients.

Side effects:

- Sedation - deep sleep - Dizziness - Headache - muscle weakness - disturbed coordination - epigastric distress - dry mouth - nausea - vomiting - urinary frequency, anemia (pancytopnea) .
- Paradoxical excitation (especially in children & elderly) → Restlessness, irritability, insomnia , hysteria, tremors euphoria, nervousness, hallucinations , disorientation & convulsion.
- Usually caused by overdose (acute toxicity).

Nursing considerations:

☒ Inject I.M. preparations deep into muscles.

☒ Oral preparations may cause gastric irritation, so give drug with meals.

☒ Note if the client has any medical history of ulcer, glaucoma & if the client is pregnant.

☒ Obtain a baseline B.P. , Pulse & respiration .

☒ Note signs of CNS depression (signs of overdose so induce vomiting).

☒ If in hospital, use side rails (safety measures).

☒ Advice client to report signs of side effects immediately.

☒ Instruct client to avoid undue exposure to sun.

☒ If the drug is being used for motion sickness, it should be taken 30 minutes before transporting.

☒ Caution the client not to drive a car or operate other machinery.

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84- Propofol :

Trade names: Diprivan

Class: short-acting Intravenous anesthetic

Pregnancy: (Category B)

Action:

Produces sedation/hypnosis rapidly (within 40 sec) and smoothly with minimal excitation; decreases IOP and systemic vascular resistance; rarely is associated with malignant hyperthermia and histamine release; suppresses cardiac output and respiratory drive.

Uses:

Induction and maintenance of anesthesia in adults; induction anesthesia in children at least 3 yr of age; maintenance anesthesia in children at least 2 mo of age; initiation and maintenance of monitored anesthesia care sedation in adults; sedation in intubated or respiratory-controlled adult ICU patients.

Dose:

Induction of anesthesia, by intravenous injection or infusion, 1.5–2.5 mg/kg (less in those over 55 years) at a rate of 20–40 mg every 10 seconds; CHILD over 1 month, administer slowly until response (usual dose in child over 8 years 2.5 mg/kg, may need more in younger child,

Maintenance of anesthesia, by intravenous injection, 25–50 mg repeated according to response or by intravenous infusion, 4–12 mg/kg/hour; CHILD over 3 years, by intravenous injection or infusion, 9–15 mg/kg/hour

Sedation in intensive care, by intravenous infusion, adult over 17 years, 0.3–4 mg/kg/hour

Contraindications:

Situations in which general anesthesia or sedation are contraindicated.

Side effects:

- difficulty breathing, wheezing, swelling of the throat
- fast heartbeat, palpitations
- lightheadedness or fainting spells
- numbness or tingling in the hands or feet
- seizure (convulsion)
- skin rash, flushing (redness), or itching
- swelling or extreme pain at the injection site
- uncontrollable muscle spasm

Nursing considerations:

- Should be administered only by personnel who are trained in administration of general anesthesia and familiar with drug.
- Administer only in settings in which resuscitation equipment is immediately available.
- Shake well before use. Do not use if there is evidence of separation of phases of emulsion.
- Maintain strict aseptic technique in handling; rapid growth of organisms may occur if contaminated.
- Dilute with dextrose 5% injection, but do not dilute to concentration less than 2 mg/mL. Drug is compatible with dextrose 5%; lactated Ringer’s injection; lactated Ringer’s and

dextrose 5% injection; dextrose 5% and sodium chloride 0.45% injection; dextrose 5% and sodium chloride 0.2% Injection.

- ☒ Minimize pain associated with administration by infusing into larger veins.
- ☒ Discard any unused portions of drug or solution at end of anesthetic procedure; do not keep for more than 6 h.
- ☒ In ICU sedation discard after 12 h if administered directly from vial or after 6 h if transferred to syringe or other container.

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85- Propranolol HCL:

Trade names: Deralin, Inderal

Class: beta-adrenergic blacking agent, antiarryhthmic.

Pregnancy: (Category C / D if used in 2nd or 3rd trimesters)

Action:

manifests both beta1 and beta 2 adrenergic blocking activity.

Uses:

- ☒ Angina pectoris.
- ☒ Hypertension.
- ☒ Cardiac arrhythmias.
- ☒ Prophylaxis of migrin.
- ☒ Prophylaxis of MI.
- ☒ Pheochromocytoma

Dose:

- ☒ by mouth, hypertension, initially 80 mg twice daily, increased at weekly intervals as required; maintenance 160–320 mg daily
- ☒ Angina, initially 40 mg 2–3 times daily; maintenance 120–240 mg daily
- ☒ Arrhythmias, hypertrophic obstructive cardiomyopathy, anxiety tachycardia, and thyrotoxicosis (adjunct), 10–40 mg 3–4 times daily
- ☒ Anxiety with symptoms such as palpitations, sweating, tremor, 40 mg once daily, increased to 40 mg 3 times daily if necessary
- ☒ Prophylaxis after myocardial infarction, 40 mg 4 times daily for 2–3 days, then 80 mg twice daily, beginning 5 to 21 days after infarction
- ☒ Migraine prophylaxis and essential tremor, initially 40 mg 2–3 times daily; maintenance 80–160 mg daily

- By intravenous injection, arrhythmias and thyrotoxic crisis, 1 mg over 1 minute; if necessary repeat at 2-minute intervals; max. 10 mg (5 mg in anesthesia)

Contraindications:

Bradycardia, C.H.F., cardiogenic shock, diabetes, thyrotoxicosis, chronic bronchitis, asthma, bronchospasm, emphysema.

Side effects:

Bradycardia, C.H.F., hypotension, cold extremities (due to peripheral vasoconstriction), edema, dyspnia, shortness of breath, nausea, vomiting, hepatomegaly and bronchospasm.

Nursing considerations:

- Instruct patient/family to take blood pressure and pulse.
- Provide written instructions as when to call physician (e.g. HR below 50 beat/min).
- Consult the physician before interrupting the therapy.
- Some drugs lead to blurring of vision, so that tell patients not to engage in activities need mental alertness.
- Instruct patient to dress warmly during cold weather.
- Diabetic patient should be very careful about symptoms of hypoglycemia.
- Report any asthma-like symptoms.

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86- Protamine Sulphate :

Trade names: prosulf

Class: heparin antidote

Pregnancy: (Category C)

Action:

It binds to heparin to form a stable ion pair which does not have anticoagulant activity.

Uses:

Protamine sulfate is usually administered to reverse the large dose of heparin administered during certain surgeries, especially heart surgery. It is also used in gene transfer and protein purification.

Dose:

by intravenous injection over approx. 10 minutes, 1 mg neutralises 80–100 units heparin when given within 15 minutes of heparin; if longer time, less protamine required as heparin rapidly excreted; max. 50 mg

Contraindications:

Patients who have shown previous intolerance to the drug.

Side effects:

I.V. injections of protamine may cause a sudden fall in blood pressure, bradycardia, pulmonary hypertension, dyspnea, or transitory flushing and a feeling of warmth. There have been reports of anaphylaxis that resulted in respiratory embarrassment (see Precautions). Other reported adverse reactions include systemic hypertension, nausea, vomiting and lassitude. Back pain has been reported rarely in conscious patients undergoing such procedures as cardiac catheterization.

Nursing considerations:

- If given too quickly, may cause a severe drop in blood pressure and severe allergic reaction.
- Facilities for resuscitation and treatment of shock should be available.
- Patients should be carefully monitored using either the activated partial thromboplastin time or the activated coagulation time, carried out 5-15 minutes after protamine sulphate administration.

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87- Quinidine sulphate:

Trade names: Apo-Quinidine; Biquin Durules; Cardioquin; Novoquinidin; Quin-Release; Quinaglute Dura-tabs; Quinate; Quinidex Extentabs.

Class: Antiarrhythmic " class I "

Pregnancy: (Category C)

Action:

- Quinidine works by decreasing the sensitivity of heart muscle cells to electrical impulses, therefore slowing the electrical conduction in the heart muscle.
- Quinidine is used to treat two forms of arrhythmia - ventricular and supraventricular arrhythmias.

Uses:

Irregular heart beats (arrhythmias)

Use with caution in

Allergic reaction to one of the active ingredients

Dose:

by mouth, quinidine sulphate 200–400 mg 3–4 times daily

Contraindications:

- Defect of the heart's electrical message pathways resulting in decreased function of the heart (heart block)
- This medicine should not be used if you are allergic to one or any of its ingredients.
- Certain medicines should not be used during pregnancy or breastfeeding.

Side effects:

- Rash
- Inability of the heart to pump blood efficiently (heart failure)
- Blood disorders
- Disturbances of the gut such as diarrhea, constipation, nausea, vomiting or abdominal pain
- Irregular heart beat (ventricular arrhythmias)
- Fever (pyrexia)
- Lupus syndrome
- Decreased electrical impulses within the heart (myocardial depression)

Nursing considerations:

- A test dose of a single tablet of quinidine sulfate (200 mg) by mouth should be given initially in order to ascertain any possible hypersensitivity to quinidine. Hypersensitivity to quinidine, although rare, should be constantly considered, especially during the first week of therapy.
- Continuous ECG monitoring is recommended in all cases in which quinidine is used in large doses.
- Gastrointestinal symptoms such as nausea, vomiting, diarrhea and colic may be minimized by giving the drug with food.

****

88- Ranitidine HCL :

Trade names: Zantac , Randine

Class: ulcer healing drug "H2-receptor antagonists "

Pregnancy: (Category B)

Action:

It competitively inhibits gastric acid secretion by blocking the effect of histamine on histamine H2-receptors.

Uses:

Short-term (up to 8 wks) & maintenance treatment of duodenal ulcer &

- treatment of benign gastric ulcer .
- Management of hypersecretion of gastric acid .
- Reflux esophagitis.

Dose:

- by mouth, 150 mg twice daily or 300 mg at night
  Prophylaxis of NSAID-induced duodenal ulcer, 150 mg twice daily
- Reflux oesophagitis, 150 mg twice daily or 300 mg at night for up to 8 weeks, By intramuscular injection, 50 mg every 6–8 hours
- By slow intravenous injection, 50 mg diluted to 20 mL and given over at least 2 minutes; may be repeated every 6–8 hours
  Prophylaxis of stress ulceration, initial slow intravenous injection of 50 mg then continuous infusion, 125–250 micrograms/kg per hour

Contraindications:

Liver cirrhosis, impaired renal & hepatic function .

Side effects:

Constipation , nausea , vomiting, diarrhea, headache
Dizziness , malaise , vertigo , bradycardia or tachycardia
Pancytopnea , rashes, bronchospasm , alopecia.

Nursing considerations:

- Dilute for I.V. use (50 mg in 20 ml of 0.9% Nacl) .
- Note any evidence of renal or liver disease.
- Obtain baseline liver & kidney function.
- Note for signs of infection .
- Adequate hydration for problem of diarrhea.

****

89- Regular Insulin:

Trade names: Humulin R, Insulin-Toronto, Novolin R, Iletin II Regular, Velosulin BR

Class: Short-acting insulin

Pregnancy: (Category B)

Action:

- Lower blood glucose by increasing transport into cells and promoting the conversion of glucose to glycogen
- Promote the conversion of amino acids to proteins in muscle and stimulate triglyceride formation
- Inhibit the release of free fatty acids
- Sources include pork, beef/pork combinations, semisynthetic, biosynthetic, and recombinant DNA.
- Therapeutic Effects:
    - Control of blood sugar in diabetic patients.

Uses:

- Treatment of insulin-dependent diabetes mellitus (IDDM, type 1)
- Management of non–insulin-dependent diabetes mellitus (NIDDM, type 2) unresponsive to treatment with diet and/or oral hypoglycemic agents
- Concentrated insulin U-500: Only for use in patients with insulin requirements >200 units/day.

Dose:

by subcutaneous, intramuscular, or intravenous injection or intravenous infusion, according to requirements " usually bolus 0.1 unit/kg followed by infusion 0.05-0.1 unit/kg/hour

Contraindications:

- Allergy or hypersensitivity to a particular type of insulin, preservatives, or other additives.

Side effects:

Derm: urticaria.

Endo: Hypoglycemia, rebound hyperglycemia (Somogyi effect).

Local: lipodystrophy, itching, lipohypertrophy, redness, swelling.

Misc: allergic reactions including Anaphylaxis.

Nursing considerations:

- Read the product information & any important notes inserted into the package.
- Refrigerate stock supply of insulin but avoid freezing.
- Follow the guidelines with respect to mixing the various types of insulin.
- Invert the vial several times to mix before the material is withdrawn “avoid vigorous shaking”.
- Assist patient for self-administration of insulin.
- Rotate the sites of S.C. injections to prevent the problem of hypertrophy or atrophy at injection site.
- Allow insulin to remain at room temperature 1 hour before administration.
- Apply pressure for 1 minute, don’t massage since it may interfere with rate of absorption.
- If breakfast must be delayed, delay the administration of morning dose of insulin.
- Obtain a thorough nursing history from the client / family.
- If the client has symptoms of hyperglycemia reaction:
- Have regular insulin available for administration.
- Monitor client closely after administration.
- Check blood glucose, urine glucose, and acetone.
- Check for early symptoms of hypoglycemia.
- Assess diabetic more closely for infection or emotional disturbances that
- may increase insulin requirements.
- Explain the necessity for close regular medical supervision.
- Explain to patient how to test the urine for sugar & acetone.
- Explain the use & care of equipment & the storage of medication.
- Explain the importance of exercise & adhering to the prescribed diet.
- Explain the importance of carrying candy or sugar at all times to counteract
- hypoglycemia should it occur.
- Provide the client & family with a printed chart explaining symptoms of hypoglycemia , hyperglycemia & instructions concerning what to do for each.
- Instruct client that blurring of vision will subside within 6-8 weeks.

- Advise client to check vials of insulin carefully before each dose. Regular
- insulin should be clear, where as other forms may be cloudy.

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90- Salbutomol :Albuterol:

Trade names: Ventolin

Class: sympathomimetic agent, bronchodilator

Pregnancy: (Category C)

Action: stimulate β 2 receptors of the bronchi leading to bronchodilation.

Uses:

- Bronchial asthma.
- Bronchospasm due to bronchitis or emphysema.
- Parenteral for treatment of status asthmaticus.

Dose:

- by mouth, 4 mg (elderly and sensitive patients initially 2 mg) 3–4 times daily; max. single dose 8 mg; CHILD under 2 years 100 micrograms/kg 4 times daily [unlicensed]; 2–6 years 1–2 mg 3–4 times daily, 6–12 years 2 mg 3–4 times daily
- By subcutaneous or intramuscular injection, 500 micrograms, repeated every 4 hours if necessary
- By slow intravenous injection, 250 micrograms, repeated if necessary
- By intravenous infusion, initially 5 micrograms/minute, adjusted according to response and heart-rate usually in range 3–20 micrograms/minute, or more if necessary; CHILD 1 month–12 years 0.1–1 microgram/kg/minute [unlicensed]
- By inhalation of nebulised solution, chronic bronchospasm unresponsive to conventional therapy and severe acute asthma, ADULT and CHILD over 18 months 2.5 mg, repeated up to 4 times daily; may be increased to 5 mg if necessary, but medical assessment should be considered since alternative therapy may be indicated; CHILD under 18 months, [unlicensed] (transient hypoxaemia may occur—consider supplemental oxygen), 1.25–2.5 mg up to 4 times daily but more frequent administration may be needed in severe cases

Contraindications:

hypersensitivity

Side effects:

- Tachycardia, arrhythmias, anginal pain.
- Nausea, vomiting.

- Dizziness, sweating, flushing.
- Headache, weakness, vertigo, and insomnia.

Nursing considerations:

- Don't exceed the recommended dose.
- The contents of the container are under pressure, don't store near heat or open flames.
- When given by neubilization, use facemask or mouth-piece.
- Compress O2 or air at 6 – 10 L\min for 5-15 minutes.
- Observe client for evidence of allergic response.
- NEVER give the solution prepared to be given as inhalation by the IV route. It may cause severe tachycardia.

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91- Sodium Bicarbonate :

Trade names: Neut

Class: Alkali

Pregnancy: (Category C)

Action:

Sodium bicarbonate is a systemic alkalizing agent which, when given intravenously will increase plasma bicarbonate, buffers excess hydrogen ion concentration, raises blood pH and reverses the clinical manifestations of acidosis.

Uses:

Sodium bicarbonate is used as an alkalinizing agent in the treatment of metabolic acidosis which may occur in many conditions including diabetes, starvation, hepatitis, cardiac arrest, shock, severe dehydration, renal insufficiency, severe diarrhea, Addison's disease or administration of acidifying salts (e.g. excessive sodium chloride, calcium chloride, ammonium chloride).

Sodium bicarbonate is also used to increase urinary pH in order to increase the solubility of certain weak acids (e.g. cystine, sulphonamides, uric acid) and in the treatment of certain intoxications (e.g. methanol, phenobarbitone, salicylates) to decrease renal absorption of the drug or to correct acidosis.

Sodium bicarbonate reduces stomach acids and can make the urine less acidic. It is used as an antacid to treat heartburn, indigestion, and other stomach disorders. It is also used to treat various kidney disorders and to increase the effectiveness of sulfonamides.

Dose:

by slow intravenous injection, a strong solution (up to 8.4%), or by continuous intravenous infusion, a weaker solution (usually 1.26%), an amount appropriate to the body base deficit " usually 1-2 mEq/kg "

Contraindications:

Sodium Bicarbonate Injection, USP is contraindicated in patients who are losing chloride by vomiting or from continuous gastrointestinal suction, and in patients receiving diuretics known to produce a hypochloremic alkalosis.

Side effects:

- nausea or vomiting;
- headache;
- sever mood changes;
- muscle pain;
- swelling of feet, ankles or legs
- decreased appetite;
- unusual tiredness;
- constipation;
- dry mouth or increased thirst; or
- increased urination.

Overdosage

Symptoms

Metabolic alkalosis, which may be, accompanied compensatory hyperventilation, paradoxical acidosis of the cerebrospinal fluid, severe hypokalaemia, hyperirritability or tetany.

Treatment

The bicarbonate should be stopped and the patient managed according to the degree of alkalosis present. To control the symptoms of alkalosis the patient should rebreathe expired air. Sodium chloride injection 0.9% may be given intravenously, potassium chloride also may be indicated if there is hypokalaemia.

Calcium gluconate may be used to control hyperirritability and tetany which can occur in severe alkalosis. Ammonium chloride may also be indicated as an acidifying agent in severe cases.

Nursing considerations:

- Laboratory determination of the patient's acid base status is recommended before and during treatment to minimize the possibility of overdosage and resultant metabolic alkalosis.

- The use of scalp veins should be avoided.
- Do not use the injection if it contains precipitate. Do not use unless the solution is clear and the container and seal are intact. Discard any unused portion

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92- Spironolactone :

Trade names: Aldacton

Class: Potassium-sparing diuretics

Pregnancy: (Category C/ D if used in pregnancy-induced hypertension)

Action:

- Is a mild diuretic that acts on the distal tubule to inhibit sodium exchange for potassium which results in increased secretion of sodium and water & conservation of potassium .
- It is also aldosterone antagonist.
- It has slight antihypertensive effect .

Uses:

- Edema due to congestive heart failure
- liver cirrhosis.
- Nephrotic syndrome .
- Essential hypertension.
- Primary hyperaldosteronism.
- Hypokalemia (as in CHF) .

Dose:

- 100–200 mg daily, increased to 400 mg if required; CHILD initially 3 mg/kg daily in divided doses
- Heart failure low doses of spironolactone (usually 25 mg) daily " already receiving an ACE inhibitor and a diuretic "

Contraindications:

- Acute renal insufficiency .
- Progressive renal failure .
- Patients receiving potassium supplement.
- Hyperkalemia.

Side effects:

- Hyperkalemia, hyponatremia (dry mouth , lethargy, thirst & easy fatigability).
- Vomiting , diarrhea, cramps.
- Menstrual irregularities, gynecomastia, hirsutism & deeping of voice , impotence.
- Skis rashes & breast carcinoma .

Nursing considerations:

- protect drug from light.
- Food may increase absorption of aldactone.
- Obtain serum electrolyte levels prior to starting therapy.
- Record vital signs, intake & out put & body weight.
- Advise the client to avoid food high in potassium.

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93- Streptokinase :

Trade names: streptase

Class: Thrombolytic agent.

Pregnancy: (Category C)

Action:

Acts with plasminogen to produce an activator complex which enhance the conversion of plasminogen to plasmin which breaks down fibrinogen fibrin clot & other plasma proteins.

Uses:

- Deep venous thrombosis (DVT)
- Myocardial infarction (MI)
- To clear occluded arteriovenous or IV canula .

Dose:

myocardial infarction, 1 500 000 units over 60 minutes

Deep-vein thrombosis, pulmonary embolism, acute arterial thromboembolism, central retinal venous or arterial thrombosis, by intravenous infusion, 250 000 units over 30 minutes, then 100 000 units every hour for up to 12–72 hours according to condition with monitoring of clotting parameters

Contraindications:

Hemorrhage.

Side effects:

- Bleeding,

- nausea, and
- headache.

Nursing considerations:

- Before using Streptase, Streptokinase, an attempt should be made to clear the cannula by careful syringe technique, using heparinized saline solution. If adequate flow is not re-established, Streptokinase may be employed
- Clamp off cannula limb(s) for 2 hours. Observe the patient closely for possible adverse effects.
- After treatment, aspirate contents of infused cannula limb(s), flush with saline, reconnect cannula.

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94- Succinyl Choline :

Trade names: Scoline

Class: Depolarising muscle relaxants

Pregnancy: (Category C)

Action:

An ultra short-acting depolarizing skeletal muscle relaxant, Succinyl Choline bonds with motor endplate cholinergic receptors to produce depolarization (perceived as fasciculation). The neuromuscular block remains as long as sufficient quantities of Succinyl Choline remain, and is characterized by a flaccid paralysis.

Uses:

Succinyl Choline chloride is indicated as an adjunct to general anesthesia, to facilitate tracheal intubation, and to provide skeletal muscle relaxation during surgery or mechanical ventilation, and to reduce the intensity of muscle contractions associated with electro- or pharmacological- induced convulsions.

Dose:

- by intravenous injection, initially 1 mg/kg; maintenance, usually 0.5–1 mg/kg at 5–10 minute intervals; max. 500 mg/hour; neonate and infant, 2 mg/kg; child, 1 mg/kg
- By intravenous infusion of a solution containing 1–2 mg/mL 2.5–4 mg/minute; max. 500 mg/hour;
- By intramuscular injection, INFANT up to 4–5 mg/kg; CHILD up to 4 mg/kg; max. 150 mg

Contraindications:

Succinyl Choline is contraindicated in persons with personal or familial history of malignant hyperthermia, skeletal muscle myopathies, and known hypersensitivity to the drug.

Side effects:

Adverse reactions to Succinyl Choline consist primarily of an extension of its pharmacological actions. Succinyl Choline causes profound muscle relaxation resulting in respiratory depression to the point of apnea; this effect may be prolonged. Hypersensitivity reactions, including anaphylaxis, may occur in rare instances. The following additional adverse reactions have been reported: cardiac arrest, malignant hyperthermia, arrhythmias, bradycardia, tachycardia, hypertension, hypotension, hyperkalemia, prolonged respiratory depression or apnea, increased intraocular pressure, muscle fasciculation, jaw rigidity, postoperative muscle pain, rhabdomyolysis with possible myoglobinuric acute renal failure, excessive salivation, and rash.

Nursing considerations:

- Succinylcholine should not be used if organophosphate agents have been given or applied recently.
- Succinylcholine chloride does not have analgesic effects; and should be used with appropriate analgesic/sedative/anesthetic agents.
- Be prepared to administer oxygen and artificial respiration.
- Facilities for resuscitation and treatment of shock should be available.

****

95- Thiopental Sodium :

Trade names: Pentothal

Class: Barbiturates " Intravenous anesthetic "

Pregnancy: (Category C)

Action:

Thiopentone is a very short acting I.V Barbiturate used as an anesthetic agent. It has poor analgesic and muscle relaxing properties.

Uses:

- as the sole anesthetic agent for brief (15 minute) procedures,
- for induction of anesthesia prior to administration of other anesthetic agents,

- to supplement regional anesthesia,
- to provide hypnosis during balanced anesthesia with other agents for analgesia or muscle relaxation,
- for the control of convulsive states during or following inhalation anesthesia, local anesthesia, or other causes,
- in neurosurgical patients with increased intracranial pressure, if adequate ventilation is provided, and
- for narcoanalysis and narcosynthesis in psychiatric disorders.

Dose:

induction of general anaesthesia, by intravenous injection as a 2.5% (25 mg/mL) solution, induction 3-5 mg/kg , in fit premedicated adults, initially 100–150 mg (reduced in elderly or debilitated) over 10–15 seconds (longer in elderly or debilitated), followed by further quantity if necessary according to response after 30–60 seconds; or up to 4 mg/kg; CHILD induction 2–7 mg/kg

Raised intracranial pressure, by intravenous injection, 1.5–3 mg/kg/hour

Contraindications:

Absence of suitable veins for intravenous administration,

hypersensitivity (allergy) to barbiturates and

variegate porphyria (South African) or acute intermittent porphyria.

Side effects:

- Adverse reactions include
- respiratory depression,
- myocardial depression,
- cardiac arrhythmias,
- prolonged somnolence and recovery,
- sneezing,
- coughing,
- bronchospasm,
- laryngospasm and shivering.
- Anaphylactic and anaphylactoid reactions to Pentothal (Thiopental Sodium for Injection, USP) have been reported. Symptoms, e.g., urticaria, bronchospasm, vasodilatation and edema should be managed by conventional means.

Nursing considerations:

- Barbiturate anesthetics should be administered only by individuals familiar with their use and skilled in airway management. Age- and size-appropriate resuscitative and endotracheal intubation equipment, oxygen, and medications for prevention and treatment of anesthetic emergencies must be immediately available. Airway patency must be maintained at all times
- Care should be taken to avoid extravasation or intra-arterial injection of barbiturate anesthetics.
- Extravascular injection may cause pain, swelling, ulceration, and necrosis. Intra-arterial injection may produce arteritis, followed by vasospasm, edema, thrombosis, and gangrene of an extremity.
- Sterile water for injection, 5% dextrose injection, or 0.9% sodium chloride injection may be used as diluents. Bacteriostatic diluents and lactated Ringer's injection should not be used as diluents because they tend to cause precipitation

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96- Thyroxin :

Trade names: Eltroxin

Class: Thyroid hormones

Pregnancy: (Category A)

Action:

- Principal effect is increasing metabolic rate of body tissues:
  - Promote gluconeogenesis
  - Increase utilization and mobilization of glycogen stores
  - Stimulate protein synthesis
  - Promote cell growth and differentiation
  - Aid in the development of the brain and CNS
- Contain T_3 (triiodothyronine) and T_4 (thyroxin) activity.
  - Therapeutic Effects:
  - Replacement in deficiency states with restoration of normal hormonal balance
  - Suppression of thyrotropin-dependent thyroid cancers.

Uses:

- Replacement or substitution therapy in diminished or absent thyroid function of many causes
- Treatment of some types of thyroid cancer.

Dose:

ADULT, initially 50–100 micrograms (50 micrograms for those over 50 years) daily, preferably before breakfast, adjusted in steps of 50 micrograms every 3–4 weeks until normal metabolism maintained (usually 100–200 micrograms daily); where there is cardiac disease, initially 25 micrograms daily or 50 micrograms on alternate days, adjusted in steps of 25 micrograms every 4 weeks
Congenital hypothyroidism and juvenile myxoedema, CHILD up to 1 month initially 5–10 micrograms/kg daily, over 1 month initially 5 micrograms/kg daily adjusted in steps of 25 micrograms every 2–4 weeks until mild toxic symptoms appear then reduce dose slightly

Contraindications:

- Hypersensitivity
- Recent MI
- Thyrotoxicosis
- Known alcohol intolerance (liothyronine injection only)
- Hypersensitivity to beef (Thyrar product).

Side effects:

- CNS: insomnia, irritability, nervousness, headache.
- CV: CARDIOVASCULAR COLLAPSE, arrhythmias, tachycardia, angina pectoris, hypotension, increased blood pressure, increased cardiac output.
- GI: cramps, diarrhea, vomiting.
- Derm: hair loss (in children), increased sweating.
- Endo: hyperthyroidism, menstrual irregularities.
- Metab: weight loss, heat intolerance.
- MS: accelerated bone maturation in children.

Nursing considerations:

- The treatment is initiated slowly (with small doses) & gradually increased.
- Store medications in cool dark place.
- Take complete nursing history .

- Note if the client is taking antidiabetics drugs & document .
- Take baseline ECG. then at regular intervals.
- Monitor thyroid function closely.
- Observe client for side effects.
- Monitor PT & PTT closely since the drug increases hypoprothrombinemia.
- Monitor HR & B.P. closely for cardiac patients.
- Instruct the client to report side effects e.g. weight loss & nervousness to physician.
- Have dietitian counsel clients regarding diet according to the energy demands.
- Female client should record menstrual irregularities .
- Encourage the client to keep follow-up visits.

****

97- Tranexamic Acid :

Trade names: Cyklokapron, Hexacapron

Class: Antifibrinolytic drugs and haemostatic

Pregnancy: (Category B)

Action:

Tranexamic acid is an Antifibrinolytic that competitively inhibits the activation of plasminogen to plasmin.

Uses:

This medication is used for short-term control of bleeding in hemophiliacs, including dental extraction procedures.

Dose:

- by mouth, local fibrinolysis, 15–25 mg/kg 2–3 times daily
  Menorrhagia (initiated when menstruation has started), 1 g 3 times daily for up to 4 days; max. 4 g daily
- Hereditary angioedema, 1–1.5 g 2–3 times daily
  By slow intravenous injection, local fibrinolysis, 0.5–1 g 3 times daily " 10 mg /kg "

Contraindications:

- In patients with acquired defective color vision, since this prohibits measuring one endpoint that should be followed as a measure of toxicity.
- In patients with subarachnoid hemorrhage. Anecdotal experience indicates that cerebral edema and cerebral infarction may be caused by CYKLOKAPRON in such patients.
- In patients with active intravascular clotting.

Side effects:

Nausea, vomiting, diarrhea might occur. If these persist or worsen, notify your doctor promptly. Very unlikely but report promptly: vision changes, dizziness.

Nursing considerations:

- For intravenous infusion, CYKLOKAPRON Injection may be mixed with most solutions for infusion such as electrolyte solutions, carbohydrate solutions, amino acid solutions and Dextran solutions.
- The mixture should be prepared the same day the solution is to be used.
- CYKLOKAPRON Injection should NOT be mixed with blood.
- The drug is a synthetic amino acid, and should NOT be mixed with solutions containing penicillin.

98- Valproic Acid Acid:

Trade names: Depakene, Depakine, Sodium valproate, Valparin

Class: anticonvulsants, vascular headache suppressants

Pregnancy: (Category D)

Action:

- Increase levels of GABA, an inhibitory neurotransmitter in the CNS.
- Therapeutic Effects:
  - ✓ Suppression of absence seizures
  - ✓ Decreased manic behavior
  - ✓ Decreased frequency of migraine headaches.

Uses:

- Simple and complex absence seizures
- Partial seizures with complex symptomatology
- Divalproex only:

- ✓ Manic episodes associated with bipolar disorder (delayed-release only)
- ✓ Prevention of migraine headache (delayed and extended release).

- Unlabelled Uses:
  - ✓ IV: Treatment of migraine headache.

Dose:

- by mouth, initially, 600 mg daily given in 2 divided doses, preferably after food, increasing by 200 mg/day at 3-day intervals to a max. of 2.5 g daily in divided doses, usual maintenance 1–2 g daily (20–30 mg/kg daily);
- CHILD up to 20 kg, initially 20 mg/kg daily in divided doses, may be increased provided plasma concentrations monitored (above 40 mg/kg daily also monitor clinical chemistry and haematological parameters);
- over 20 kg, initially 400 mg daily in divided doses increased until control (usually in range of 20–30 mg/kg daily); max. 35 mg/kg daily
- By intravenous injection (over 3–5 minutes) or by intravenous infusion, continuation of valproate treatment when oral therapy not possible, same as current dose by oral route.

Contraindications:

- Hypersensitivity
- Hepatic impairment
- Some products contain tartrazine; avoid in patients with known hypersensitivity.

Side effects:

- CNS: confusion, dizziness, headache, sedation.
- EENT: visual disturbances.
- GI: HEPATOTOXICITY, indigestion, nausea, vomiting, anorexia, constipation, diarrhea, hypersalivation, increased appetite, pancreatitis.
- Derm: rashes.
- Hemat: leucopenia, prolonged bleeding time, thrombocytopenia.
- Metab: hyperammonemia.
- Neuro: ataxia, paresthesia.

Nursing considerations:

- Valproic acid may cause an upset stomach. Instruct the pt to take it with food and to drink plenty of water and not to take the liquid with carbonated beverages.
- If you give this drug to a child, observe and keep a record of the child's moods, behavior, attention span, hand-eye coordination, and ability to solve problems and perform tasks requiring thought. Ask the child's teacher to keep a similar record.

****

99- Vancomycin :

Trade names: vancocin

Class: antibiotic, miscellaneous

Pregnancy: (Category B)

Action:

It is derived from streptomyces orientalis, it appears to bind to bacterial cell wall, arresting it's synthesis and lysing the cytoplasmic membrane by a mechanism that is different from that of penicillin. It is bactericidal for most organisms and bactereostatic for enterococci.

Uses:

- drug should be reserved for treatment of life threatening infections when other treatment have been ineffective .
- Patients with sever staphylococcal infections resistant or allergic to penicillin or cephalosporin such as:
  - * Endocarditis * Osteomylitis
  - * Pneumonia * Septicemia
- Oral administration is useful in treatment of:
  - Enterocolitis *Pseudomemgranous Colitis

Dose:

- by mouth, antibiotic-associated colitis, 125 mg every 6 hours for 7–10 days, see notes above; CHILD 5 mg/kg every 6 hours, over 5 years, half adult dose
- By intravenous infusion, 500 mg every 6 hours or 1 g every 12 hours; ELDERLY over 65 years, 500 mg every 12 hours or 1 g once daily; NEONATE up to 1 week, 15 mg/kg initially then 10 mg/kg every 12 hours; INFANT 1–4 weeks, 15 mg/kg

initially then 10 mg/kg every 8 hours; CHILD over 1 month, 10 mg/kg every 6 hours

Contraindications:

* Hypersensitivity
* Minor infectious.

Side effects:

- Ototoxicity → deafness
- Nephrotoxicity → uremia
- Red-Neck syndrome: “chills, errythema of neck and back fever”.
- Skin rashes, Drug fever
- Hypotension (due to rapid administration) .
- Thrombophlebitis at the site of injection.

Nursing considerations:

- Mix as indicated on package insert.
- Intermittent infusion is the preferred route.
- Avoid rapid I.V. administration → nausea & hypotension.
- Avoid extravasations during injections .
- Monitor vital signs, intake of output.

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100- Verapamil :

Trade names: Ikacore, Calan, , Covera, Isoptin, and Verelan

Class: Calcium-channel blockers " anti-arrhythmic "

Pregnancy: (Category C)

Action:

Verapamil relaxes (widens) blood vessels (veins and arteries), which makes it easier for the heart to pump and reduces its workload.

Uses:

- P.O:
  - angina pectoris.
  - arrhythmia (a trial fibrillation, and flutter).
  - Essential hypertension.
- IV: Supraventricular tachycardia.

Dose:

- by mouth, supraventricular arrhythmias 40–120 mg 3 times daily
- Angina, 80–120 mg 3 times daily
- Hypertension, 240–480 mg daily in 2–3 divided doses By slow intravenous injection over 2 minutes (3 minutes in elderly), 5–10 mg (preferably with ECG monitoring); in paroxysmal tachyarrhythmia a further 5 mg after 5–10 minutes if required

Contraindications:

hypotension, cardiac shock, and MI.

Side effects:

AV block, bradycardia, headache, dizziness, abdominal cramps, blurring of vision, and edema.

Nursing considerations:

- Discuss with the patient/family the goals of therapy.
- Teach them how to take pulse and blood pressure. Hold the medication in case of hypotension or bradycardia and consult the treating Dr.
- Instruct the client to report any untoward sings as dizziness.
- In case of postural hypotension, advise the client to change position.
- Advise client to sit down immediately if fainting occurs.
- Calcium antagonists should be taken with meals to ↓ GI irritation.

****

101- Vitamin K :

Trade names: Aqua-Mephyton, Vitamin K

Class: Vitamin K is a fat-soluble vitamin

Pregnancy: (Category C)

Action: necessary for the production of blood clotting factors

Uses:

Vitamin K is a fat soluble vitamin which plays an important role in blood clotting. This medication is used to prevent and treat hypoprothrombinemia (low blood clot factor levels) caused by vitamin K deficiency.

Dose:

warfarin overdose " if INR > 8 " and major bleeding 10 mg by slow intravenous injection

Maintenance in TPN 10 mg slow intravenous injection twice weekly

In liver failure 10 mg /daily for 3 days.

Contraindications:

Hemolytic Anemia from Pyruvate Kinase and G6PD Deficiencies

Side effects:

an allergic reaction (difficulty breathing; closing of the throat; swelling of the lips, tongue, or face; or hives);

dizziness; fast or irregular heartbeats; or increased sweating.

Nursing considerations:

- Monitor for allergy or side effects
- High intake of vitamin K is not recommended for individuals taking anticoagulant medications such as Warfarin (coumadin).
- Instruct the pt about the normal nutritional resources: cow milk, broccoli, Brussels sprouts, cabbage, cauliflower, kale, spinach and soybeans.

****

102- Warfarin sodium :

Trade names: coumadine

Class: Oral anticoagulant

Pregnancy: (Category D/ X according to manufacturer—DuPont Pharma, 2000.]

Action:

prevent the formation of factors II, VII, I X and X in the liver.

Uses:

prophylaxis and treatment of deep venous thrombosis.

Thromboembolison - Thrombophlebitis.

Prophylaxis from myocardial infarction.

Dose:

The usual adult induction dose of warfarin is 10 mg

daily for 2 days (higher doses no longer recommended). The subsequent maintenance dose depends upon the prothrombin time, reported as INR (international normalised ratio). The daily maintenance dose of warfarin is usually 3 to 9 mg (taken at the same time each day), Whenever possible, the base-line prothrombin time should be determined but the initial dose should not be delayed whilst awaiting the result.

Contraindications:

Hemorrhagic tendencies - Blood disorders.

Ulcerative lesion of GIT.

Impaired renal and hepatic function.

Severe hypertension.

Thrombocytopenia.

Side effects:

hemorrhagic accidents.

Nursing considerations:

- Daily monitoring of prothrombin time is recommended.
- Instruct clients to take the drug before meal.
- Remind clients to wear identification band that states that they are on anticoagulant therapy.
- Advise client to avoid activities that may cause injury.
- Vitamin K should by available
- Food rich in vitamin K should by avoided.

Resources

- 2001 Lippincott Nursing Drug Guide, Amy M.Karch Copyright © 2001 by Lippincott Williams & Wilkins
- Pharmacology of Critical Care Clinic Steven J. Martin and Joseph F. Dasta D 2006 Elsevier Inc. (2006).
- Critical Care Medication Administration Lucile Packard Children's Stanford Department of Pharmacology.
- Drug and Drugs: A Practical Guide to the Safe Use of Common Drugs in Adult Peter Hamilton and David Hui 2nd Edition(2003).

Some electronic sites resources:

- http://www.medicinenet.com/medications/article.htm
- http://www.druglib.com/drugindex/name/a/
- http://www.medguides.medicines.org.uk/default.aspx
- http://en.wikipedia



تمت بحمد الله وتوفيقه